Des Plaines River Trail: South Extension Planning Study

Existing Conditions Report

January 2019

Acknowledgements

The Existing Conditions Report for the Des Plaines River Trail, South Extension Planning Study is the cumulative effort of many individuals. These include core team and steering committee members and key stakeholders who participated in interviews, meetings, and field visits. These individuals generously offered their time, knowledge, and expertise to identify opportunities and challenges, goals and objectives, and planning, environmental, and engineering issues that have helped CMAP successfully complete this report. The project team would like to thank all of the people who have worked with us to recognize and describe the specific existing conditions that will impact potential trail routes.

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Key Project Partners

Friends of the Forest Preserve
Salt Creek Greenway Association
Riverside-Brookfield High School
Metropolitan Water Reclamation District
Illinois Department of Natural Resources

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Section 1. Introduction

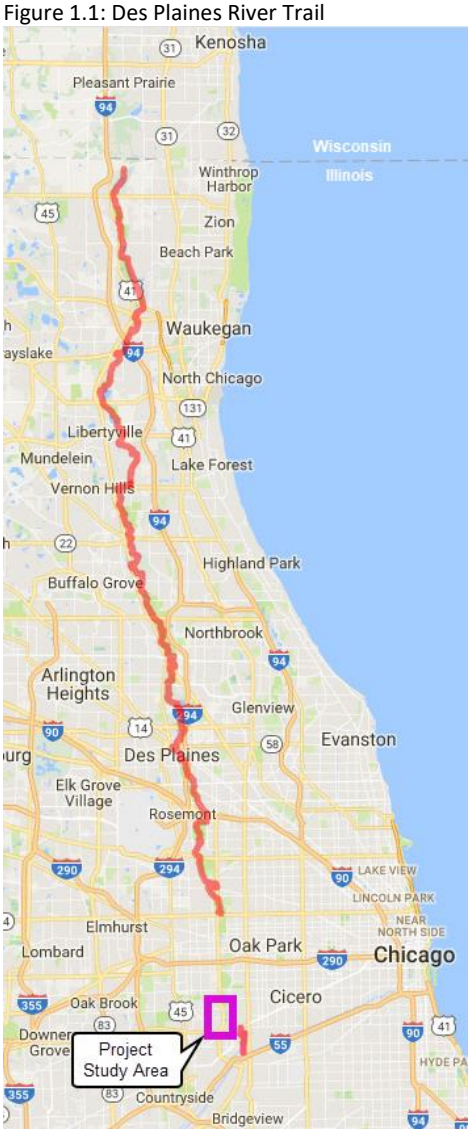
The Des Plaines River Trail: South Extension Planning Study is a joint effort between the Chicago Metropolitan Agency for Planning (CMAP), the Forest Preserve District of Cook County (FPDCC), and the Villages of Riverside, Brookfield, Lyons, and North Riverside. The purpose of the study is to explore options for extending the Des Plaines River Trail from W. 26th Street in the Village of North Riverside to Ogden Avenue in the Village of Lyons. The planning study will focus on 1) the identification of potential trail alignments for this segment, along with key community connector routes, 2) the feasibility of the identified routes, and 3) community and stakeholder support for the routes. The study supports and builds upon recent Forest Preserve and community planning efforts and investments, as well as grassroots interest in completing this trail segment and the Des Plaines River Trail as a whole.

Background and Need for Des Plaines River Trail

The Des Plaines River Trail is a major, regional, multi-use trail that runs north-south for approximately 55 miles. The trail's northern terminus is in Lake County, at Russell Road in the Village of Wadsworth, near the Illinois-Wisconsin border. The trail's current southern terminus is in the Forest Preserve's Jerome Huppert Woods, just north of North Avenue (IL-64), near the Village of Oak Park in Cook County. (See Figure 1.) The existing trail, however, is not uniform or consistent in terms of design and construction. Some segments are paved and others are crushed stone. Between Touhy and North Avenues, the trail is unimproved and presents significant challenges in terms of access and use. Recognizing this, the FPDCC, local municipalities, and trail advocacy groups are currently studying potential improvements along this segment.

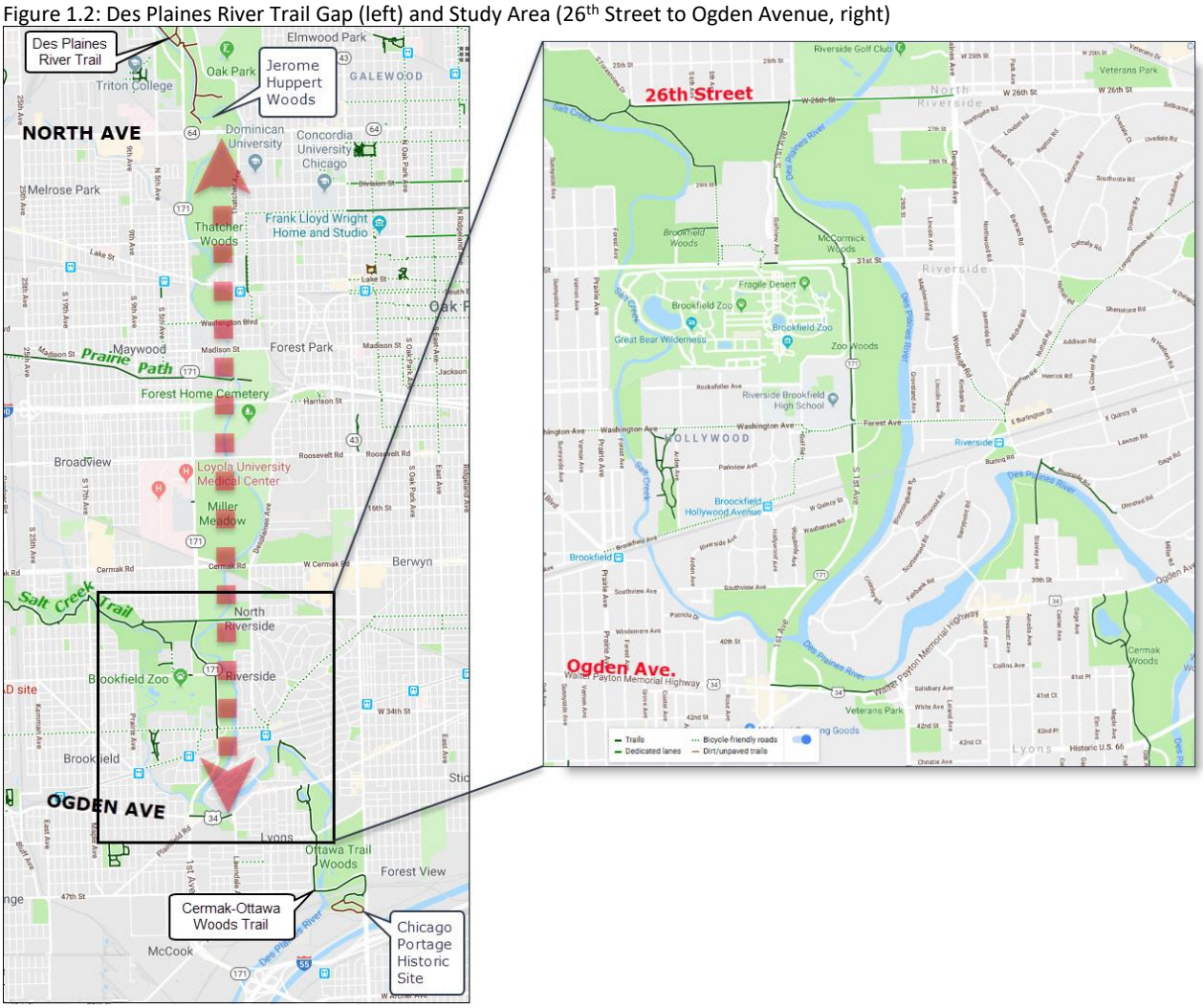
From North Avenue south to Ogden Avenue, the trail is, in large part, unconstructed. This gap, approximately 6.5 miles in length, provides an opportunity to connect to two major east-west regional trails: the Illinois Prairie Path (in the Village of Maywood) and the Salt Creek Greenway Trail (in the Village of Brookfield and within this project's study area). South of this gap, in the Village of Lyons, an existing trail runs along the Des Plaines River from the Cermak Family Aquatic Center south to the Chicago Portage National Historic Site. Although it parallels the Des Plaines River, this southern segment is commonly referred to as the Cermak-Ottawa Woods Trail. (See Figure 1.2)

Figure 1.1: Des Plaines River Trail



Source: Google Maps

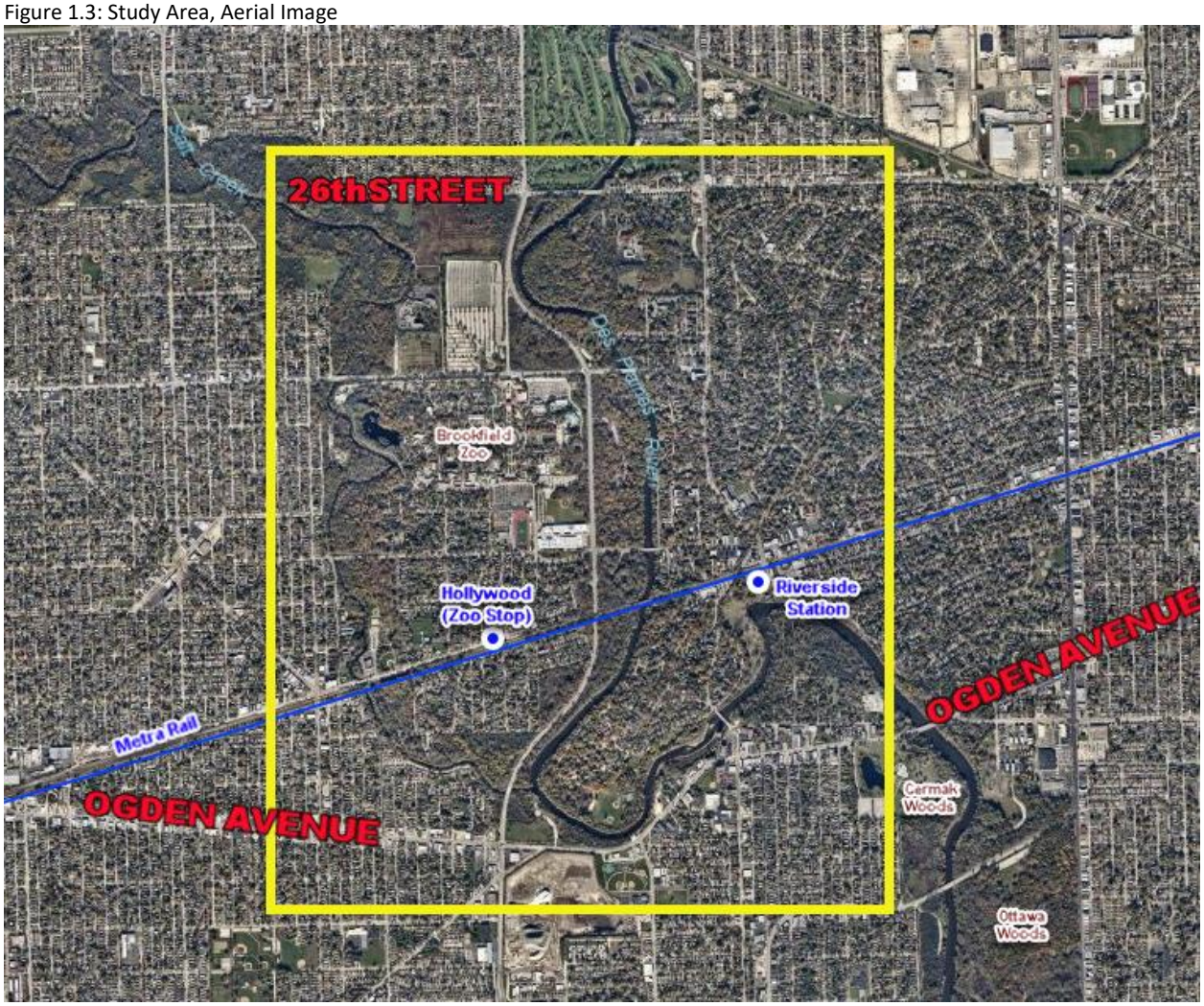
Figure 1.2: Des Plaines River Trail Gap (left) and Study Area (26th Street to Ogden Avenue, right)



Source: Google Maps

This planning study will focus on the southern third (1.86 miles) of this 6.5 mile gap, from 26th Street south to Ogden Avenue. This segment was prioritized by the FPDCC for initial study due to strong interest and support for a trail and trail connections in the adjacent Villages of Brookfield and Riverside and among key stakeholders, including Brookfield Zoo, Riverside-Brookfield High School, and the Frederick Law Olmsted Society, as well as the West Central Municipal Conference and Cook County Department of Transportation and Highways. In addition, recent investments by the Illinois Department of Transportation (IDOT) along Illinois Route 171/1st Avenue, by the Village of North Riverside along 26th Street, and by the Forest Preserve District along Ogden Avenue provide new opportunities for creating a continuous trail in this area. While the FPDCC and CMAP anticipate undertaking similar studies for segments between 26th Street and North Avenue – where Active Trans' and the Village of Rosemont's planning area picks up – they believe that conducting a successful trail study in this area will be a model and catalyst for those and other future planning efforts. The project study area is illustrated below in Figure 1.3.

Figure 1.3: Study Area, Aerial Image



Source: Nearmap.com

Goals and objectives

The primary goal of this planning study is to identify a feasible, preferred route (or routes) for the Des Plaines River Trail between 26th Street and Ogden Avenue, in order to connect the Salt Creek Greenway Trail to the Cermak-Ottawa Woods Trail. The identified trail will also connect to future Des Plaines River Trail segments north of 26th Street. The study will also identify potential key connector routes for safe bicycle and pedestrian access between the trail and the adjacent communities. Objectives of the project are to develop potential trail alignments that maintain, to the greatest extent possible, 1) off-street routing in order to increase safety and attract trail users of all ages, abilities, and levels of experience; and 2) to promote and maintain trail users' connection to nature and experience of natural surroundings. While it may be necessary to compromise on these objectives in some segments, the goal is minimize such compromises.

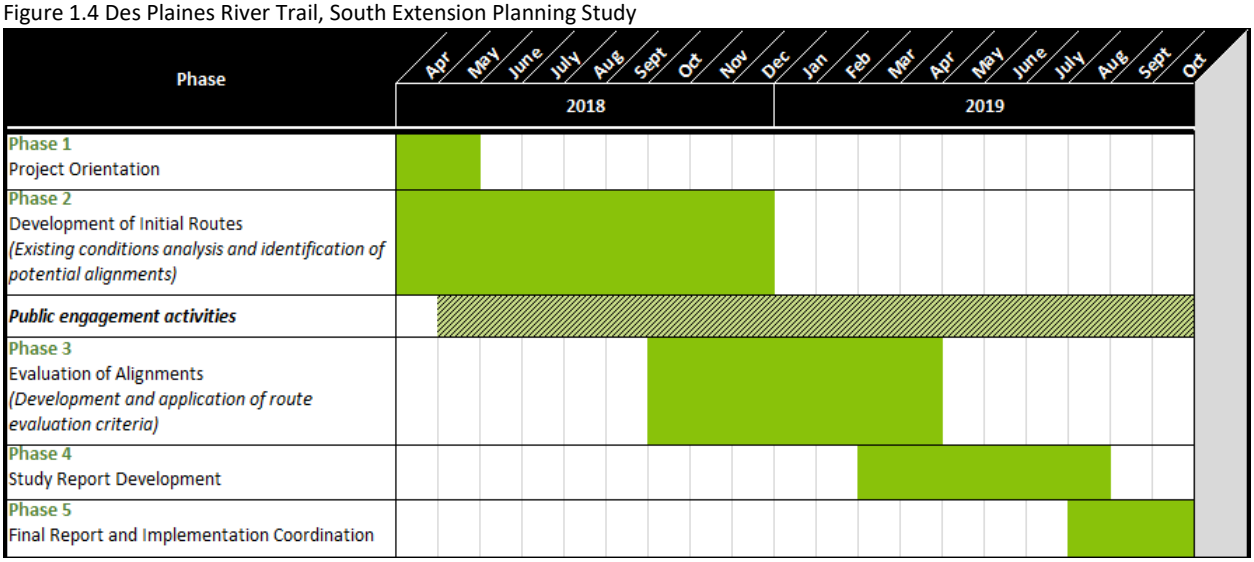
The goals and objectives for this planning study directly reflect and support the vision, goals, and objectives of previous planning efforts by many agencies and key stakeholders involved in this project, including CMAP, the FPDCC, and the communities in and near the study area. These plans, summarized in Section 3, include CMAP's Regional Greenways and Trails Plan, the FPDCC's Trail Master Plan and Recreation Master Plan, the Village of Brookfield's Active Transportation Plan and Comprehensive Plan,

the Village of Riverside Central Business District Plan and Village-Wide Traffic Study, the Village of Lyons Comprehensive Plan, and the West Central Municipal Conference Bicycle Plan, among others.

Planning Process

This study consists of a multi-step process comprising stakeholder and community outreach, goal identification, analysis of existing conditions, identification and evaluation of alternatives, resulting in a study report and implementation recommendations. The process is expected to last approximately 18-24 months. The process has been crafted with assistance from the FPDCC and has been designed to include the key agencies and stakeholders, community representatives, and subject matter experts. Key steps in the planning process are illustrated in Figure 1.4.

Figure 1.4 Des Plaines River Trail, South Extension Planning Study



Source: Chicago Metropolitan Agency for Planning (CMAP)

Purpose of the Existing Conditions Report

The Existing Conditions Report provides an overview of current conditions in the area, which are pertinent to the development of the Des Plaines River Trail. This report is designed to provide a collaborative starting point from which to move forward with core team members and stakeholders toward a shared vision and understanding of key opportunities and constraints for developing the Des Plaines River Trail within study area limits.

Relationship to ON TO 2050

The Chicago Metropolitan Agency for Planning is the official regional planning organization for the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. On October 10, 2018, CMAP adopted the ON TO 2050 Regional Comprehensive Plan, which builds on the agency's first regional plan, GO TO 2040, which was released in 2010 and updated in 2014. The ON TO 2050 Plan establishes coordinated strategies to help guide transportation investments and frames regional priorities on development, the environment, the economy, and other issues affecting quality-of-life. The plan identifies three clear, overarching principles, which inform every ON TO 2050 recommendation:

- **Inclusive Growth:** Growing our economy through opportunity for all.

- **Resilience:** Preparing for rapid changes, both known and unknown**.**
- **Prioritized Investment:** Carefully target resources to maximize benefit.

ON TO 2050 envisions a multimodal transportation system that promotes bicycling and walking, both for transportation and recreation. It also recognizes a growing desire among the region's residents for healthy, active lifestyles, and the need to create conditions and infrastructure that will make such lifestyles possible. To these ends, the plan recommends implementation of the Regional Greenways and Trails Plan, which identifies the Des Plaines River as a major trail corridor. By undertaking a project that will help complete the Des Plaines River Trail – and thereby help realize the larger regional trail system – this planning study advances important principles and goals of ON TO 2050. By doing so, the study will help shape the future of the region's active transportation network, expand its recreational opportunities, and enhance quality of life in the region as a whole.

Report Organization

The Existing Conditions Report is organized into the following sections:

Section 1: **Introduction** describes the purpose and nature of the planning study, provides background, and outlines the process utilized to create the study.

Section 2: **Study Area Profile** offers a brief summary of the study area's general characteristics, including regional context, general land use, population and housing, economic development, and natural environment.

Section 3: **Relevant Plans, Studies, and Initiatives** summarizes key documents and activities related to transportation, trails, and development within the study area, highlighting content that has direct bearing on this study.

Section 4: **Outreach to-date** summarizes the results of outreach efforts to date in the planning process and highlights key themes identified by residents and stakeholders.

Section 5: **Transportation Infrastructure** presents information, data, and analysis on conditions, issues, and potential opportunities related to the study area's transportation system, focusing especially on the modes most relevant to trails, bicycling and walking.

Section 6: **Looking Forward** synthesizes what has been learned so far and looks ahead to potential recommendations and methods of prioritization.

Next Steps

The Existing Conditions Report is an interim document that will be presented to the FPDCC, the project Steering Committee, key stakeholders, and the public for review and discussion. The next step in the planning process will be to develop potential alternative alignments for the Des Plaines River Trail within the study area, as well as key community connector routes. At the same time, a methodology for evaluating the desirability and feasibility of the proposed routes, including a discussion of the pros and cons associated with each alternative, will be developed. Additional outreach is planned to include an online survey to build upon the understanding of issues and opportunities identified in the Existing Conditions Report. The results of additional field research and outreach, as well as the information compiled in the Existing Conditions Report, will guide the development of the Des Plaines River Trail: South Extension Planning Study and its recommendations.

Section 2. Study Area Profile

Introduction

The study area for this project includes four municipalities: Brookfield, Lyons, North Riverside, and Riverside. To ensure the results of the trail extension study reflect local priorities, it is important to carefully study each of these communities before detailed recommendations area made.

This communities profile provides a detailed overview of land use, demographic, economic, environmental, and transportation factors in these four communities. The information included in this profile will inform later phases of the extension project.

Regional context

This project focuses on a small area of central Cook County, reaching from West 26th Street on the north, to Ogden Avenue on the south. The study area straddles southern reaches of the Des Plaines River and Salt Creek – including their confluence – and includes parts of four municipalities and three townships. Much of the land in the study area is owned and operated by the Forest Preserve District of Cook County (FPDCC), an independent government entity with a taxing jurisdiction coterminous with Cook County. Most roads in the study area are maintained by the municipality in which they are located, with the exceptions of US Route 34, Illinois State Route 171, Ridgewood Ave., and bridges on 26th St. and Forest Ave. over the Des Plaines River, which are maintained by the Illinois Department of Transportation (IDOT).

The Des Plaines River, which is the focus of the study area, originates in southern Wisconsin, just west of Kenosha, and travels approximately 133 miles south to Channahon, Illinois, where it merges with the Kankakee River to form the Illinois River. The Des Plaines River Trail parallels the river for much of its northern length, though not all sections of the trail are connected, and some sections have an unimproved, natural surface. Currently, the designated trail ends at North Avenue near Oak Park. When complete, the southern section of the Des Plaines River Trail—including the segments located within the study area—will connect trail users to the existing sections of the trail to the north, the Salt Creek Trail to the west, and the Illinois Prairie Path to the northwest. When the I&M Canal Trail is extended north to the Chicago Portage National Historic Site, a major trail node will be created, where the Des Plaines River Trail and I&M Canal Trail intersect, greatly improving the overall connectivity of the region's trail network.

The study area is located approximately 11 miles west of downtown Chicago, at the center of a large triangle formed by I-290 on the north, I-55 on the south, and I-294 on the west. Metra's BNSF rail line to Aurora bisects the study area into north and south portions; Illinois Route 171 (1st Avenue), running north-south down the middle of the study area, bisects it into east and west zones. Large parts of the study area consist of preserved open space, which buffer and protect the Des Plaines River and Salt Creek from run-off and provide habitat for both flora and fauna. Large freight and logistics infrastructure and facilities exist to the south near I-55 and the Chicago Sanitary and Ship Canal (CSSC). The Salt Creek Greenway Trail enters the study area from the west, where it runs for approximately 30 miles to Busse Woods Forest Preserve. This trail continues as the Cermak-Ottawa Woods Trail from Ogden south to the Chicago Portage National Historic Site, on Harlem Avenue near the CSSC. The study area is a regional trail corridor, as indicated on CMAP's Regional Greenways and Trails Plan Map.

Figure 2.1: Regional Context

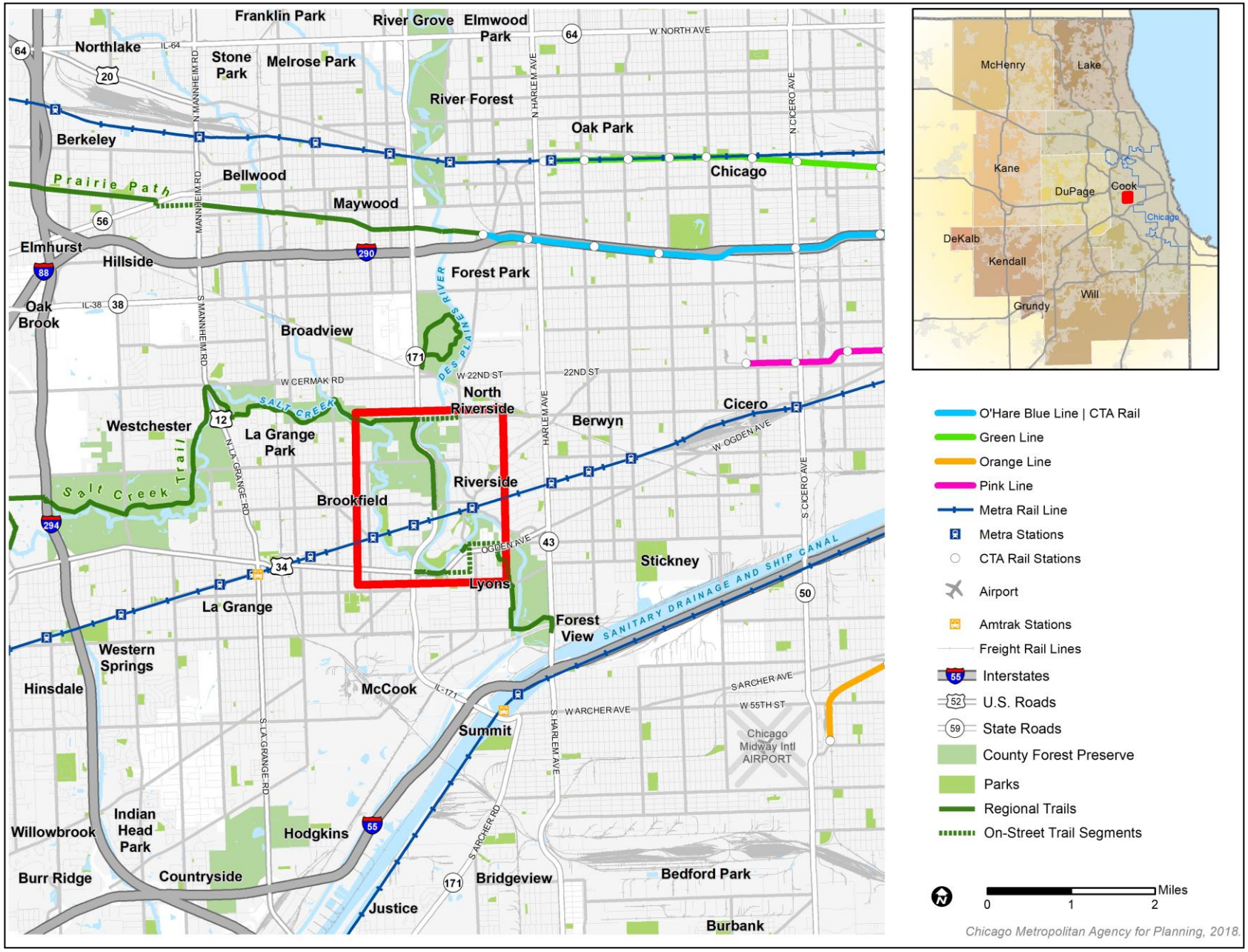
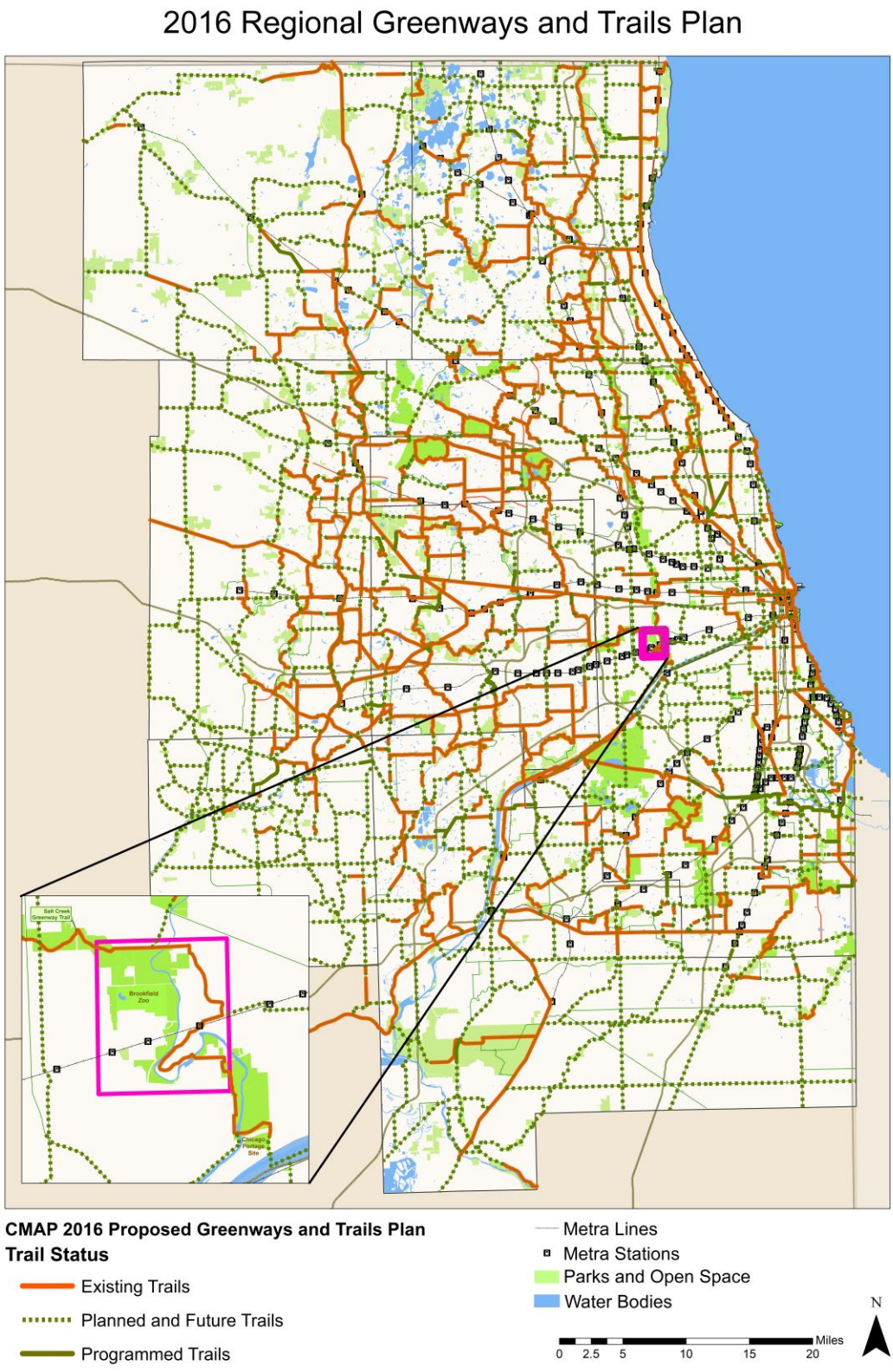


Figure 2.2: CMAP Regional Greenways and Trails Plan (2016 Update)



Land use

Development patterns within the study area are typical of mature suburbs built during the second half of the 19th century. Single family residential is the largest land use by acres, though significant commercial corridors exist near transit stations and highways. The largest commercial clusters are located along Ogden Avenue in the south, and along the BNSF railroad right-of-way through Riverside and Brookfield. Additional commercial areas exist just outside the study area, in Brookfield and other nearby communities. Large areas of freight manufacturing and warehousing exist to the south, between 47th Street and Interstate 55. North Riverside Mall and Broadview Village Square are located to the north, just outside the study area. Loyola University Medical Center Campus occupies more than one square mile of land a bit further north, along 1st Avenue.

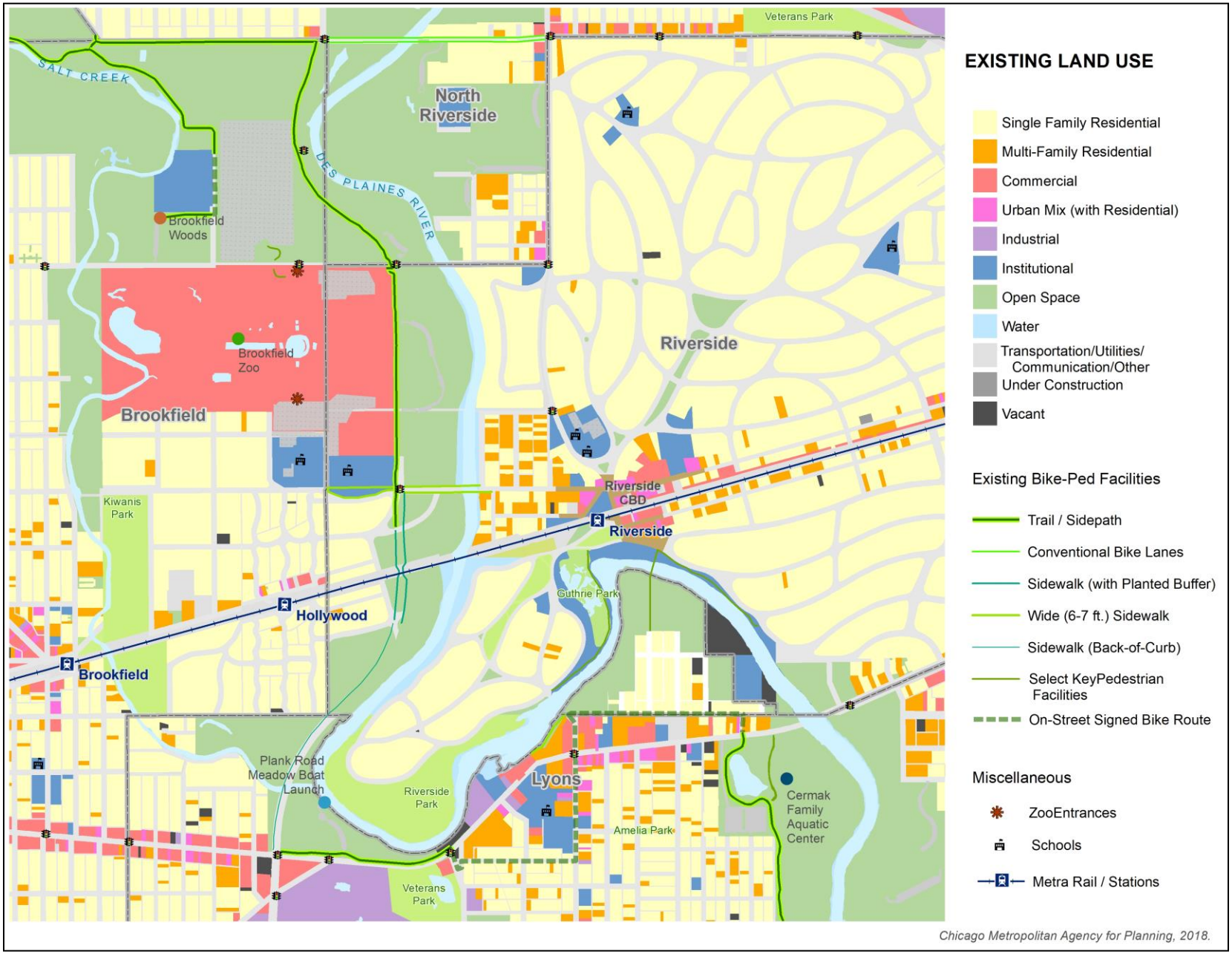
Due in large part to the presence of the Des Plaines River and Salt Creek, the study area also has significant tracts of open space. Much of these areas are protected forests that are owned and maintained by the Forest Preserve District of Cook County. These forests are critical green infrastructure assets, as they help to manage stormwater for surrounding communities and provide important habitat for local and migratory wildlife and plant communities. The study area is also home to the Brookfield Zoo, which occupies a substantial tract of land between the Des Plaines River and Salt Creek, from 28th Street on the north to Rockefeller Avenue on the south. Zoo property is located mostly within the Village of Brookfield, though part is in Riverside. In addition to landscaped animal enclosures, the zoo maintains multiple, large parking lots and diverse visitor amenities, including food and retail concessions, fountains, and pedestrian plazas and pathways. The Zoo constitutes a regional destination and major employer for the area. On the busiest days, visitors arriving by car can have a significant impact on traffic patterns and congestion in surrounding areas. Riverside-Brookfield High School and Hollywood Elementary are located south of the Zoo, between Hollywood Avenue and 1st Avenue. Table 2.1 summarizes land use in the study area.

Table 2.1: Land use in the study area

Use class	Acres	Percent
Single-Family Residential	763	40.1
Open Space	618	32.5
Commercial	194	10.2
Institutional	104	5.4
Multi-Family Residential	78	4.1
Water	60	3.1
Transportation/Utilities/Communication/Other	43	2.2
Industrial	21	1.1
Vacant	13	0.7
Urban Mix	11	0.6

Source: CMAP Land Use Inventory, 2013

Figure 2.3: Land use in the Study Area



Population and housing

The four municipalities in the study area are mature, relatively stable suburban communities. From 2000 to 2016, the four municipalities saw a population change of just 0.83 percent. During the same period, median household incomes increased slightly in Brookfield, North Riverside, and Riverside, and decreased slightly in Lyons (when adjusted for inflation). The most notable demographic change in the area has been a significant increase in Hispanic or Latino residents. Froom 2000 to 2016, the area's Latino population increased from 4,238 to 11,720, an increase of 177 percent. Today, Latinos account for 25.9 percent of the area's total population (Table 2.3).

The average household in the study area has 2.65 residents. Median ages range from 36 in Lyons to 42 in Riverside, which are near and slightly older than Cook County (36.1) and the Chicago region (36.7).

Most homes in the study area are single-family, detached (60.4 percent) and owner-occupied (70.4 percent).

Table 2.2: General population characteristics, 2012-2016

	Brookfield	Lyons	North Riverside	Riverside	All Communities
Total population	18,966	10,571	6,983	8,779	45,299
Total households	6,865	3,998	2,644	3,153	16,660
Average household size	2.7	2.6	2.6	2.8	2.65
Median age	39	36	41	42	

Source: 2000 and 2010 Census, 2016 American Community Survey five year estimates.

Table 2.3: Percentage race and ethnicity, 2012-2016

	Brookfield	Lyons	North Riverside	Riverside	All Communities
White non-Hispanic	74.1%	47.7%	58.5%	81.6%	66.9%
Hispanic or Latino*	19.2%	44.4%	30.2%	14.5%	25.9%
Black non-Hispanic	4.7%	4.6%	5.4%	1.3%	4.1%
Asian non-Hispanic	1.1%	1.9%	4.8%	2.2%	2.1%
All others	0.9%	1.6%	1.1%	0.4%	1.0%

Source: 2016 American Community Survey, five-year estimates.

Table 2.4: Age cohorts, 2016

	Brookfield		Lyons		North Riverside		Riverside		All Communities	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
19 and under	5057	26.7	2609	24.7	1704	24.4	2504	28.5	11874	26.2
20 to 34	3354	17.7	2591	24.5	1321	18.9	1185	13.5	8451	18.7
35 to 49	4011	21.1	1804	17.1	1332	19.1	1957	22.3	9104	20.1
50 to 64	4227	22.3	2100	19.9	1495	21.4	1901	21.7	9723	21.5
65 to 74	1157	6.1	896	8.5	542	7.8	657	7.5	3252	7.2
75 to 84	785	4.1	278	2.6	342	4.9	387	4.4	1792	4.0
85 and older	375	2.0	293	2.8	247	3.5	188	2.1	1103	2.4
Median age*	39		36		41		42			

*Note that all Regional Medians were calculated based on Grouped Frequency Distributions.
Source: 2016 American Community Survey five-year estimates

Table 2.5: Household income, 2016

	Brookfield	Lyons	North Riverside	Riverside	All Communities
Less than $25,000	17.1%	25.8%	24.6%	11.8%	19.4%
$25,000 to $49,999	15.7%	27.5%	19.4%	12.4%	18.5%
$50,000 to $74,999	16.8%	20.6%	18.9%	15.0%	17.7%
$75,000 to $99,999	17.0%	12.0%	15.7%	10.2%	14.3%
$100,000 to $149,999	18.7%	10.7%	12.3%	21.8%	16.4%
$150,000 and over	14.7%	3.3%	9.1%	28.9%	13.7%
Median income	$75,336	$45,825	$59,324	$100,696	

Source: 2016 American Community Survey, five-year estimates.

Table 2.6: Housing and Tenure, 2016

	Brookfield		Lyons		North Riverside		Riverside		All Communities	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Occupied housing units	6865	92.3%	3998	95.0%	2644	95.2%	3,153	92.9%	16,660	93.5%
Owner-occupied	5182	75.5%	2435	60.9%	1675	63.4%	2444	77.5%	11,736	70.4%
Renter-occupied	1683	24.5%	1563	39.1%	969	36.6%	709	22.5%	4,924	29.6%
Vacant housing units	574	7.7%	210	5.0%	134	4.8%	241	7.1%	1,159	6.5%

Source: 2016 American Community Survey, five-year estimates.

Table 2.7: Housing type, 2016

	Brookfield		Lyons		North Riverside		Riverside		All Communities	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Single-family, detached	4,863	65.4	2,393	44.4	1,790	65.0	1,790	71.3	11,459	60.4
Single-family, attached	567	7.6	71	1.3	96	3.5	104	3.1	838	4.4
2 units	502	6.8	951	17.6	10	0.4	153	4.5	1,616	8.5
3-4 units	885	11.9	942	17.5	111	4.5	222	6.6	2,160	11.4
5 or more units	617	8.3	1,035	19.2	748	27.2	491	14.5	2,831	15.2

Source: 2016 American Community Survey, five-year estimates.

Economic development

As of 2015, there are 7,496 jobs located within the study area. As shown in Table 2.8, health care and social assistance accounts for the largest share of jobs in the study area (13.1 percent). Retail (10.6 percent), Education (10 percent), and Professional, scientific, and technical services (9.1 percent) also account for a large portion of area jobs.

Roughly half of jobs in the study area pay more than $3,333 per month, and 29 percent of jobs require a bachelor's degree or higher.

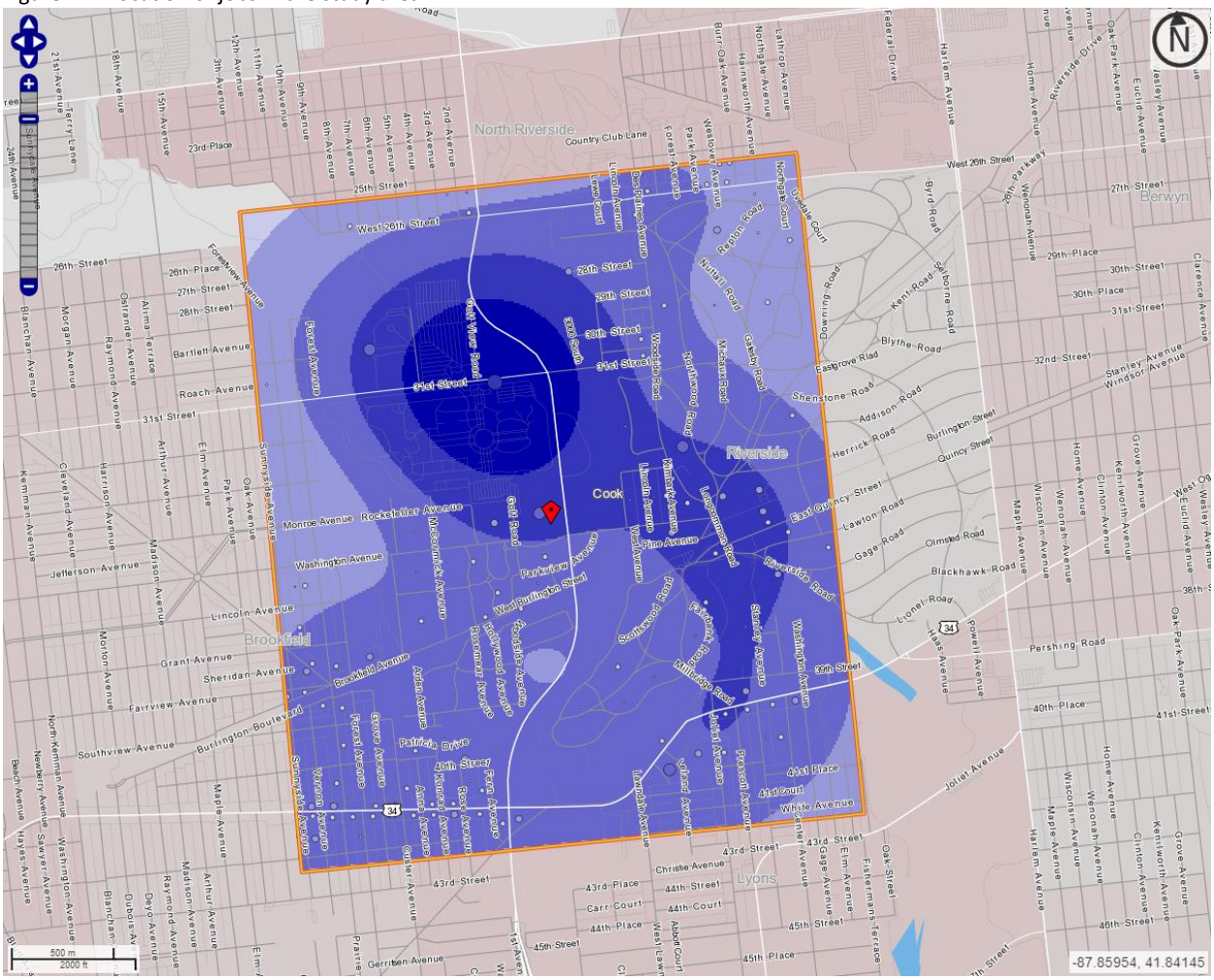
Table 2.8: Jobs by NAICS industry sector

Industry	Number of jobs	Share of jobs (percent)
Health Care and Social Assistance	979	13.1
Retail Trade	794	10.6
Educational Services	750	10
Professional, Scientific, and Technical Services	680	9.1
Accommodation and Food Services	581	7.8
Manufacturing	570	7.6
Administration & Support, Waste Management and Remediation	516	6.9
Finance and Insurance	411	5.5
Wholesale Trade	388	5.2
Transportation and Warehousing	323	4.3
Other Services (excluding Public Administration)	304	4.1
Public Administration	290	3.9
Construction	240	3.2
Arts, Entertainment, and Recreation	196	2.6
Information	182	2.4
Management of Companies and Enterprises	133	1.8
Real Estate and Rental and Leasing	108	1.4
Utilities	38	0.5
Agriculture, Forestry, Fishing and Hunting	7	0.1
Mining, Quarrying, and Oil and Gas Extraction	6	0.1

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

Brookfield Zoo is the largest single employer within the study area, and the most significant employment corridor extends from Brookfield Zoo southeast to downtown Riverside (Figure 2.4). Another large employer within this corridor is the Riverside-Brookfield High School. Data analysis, as well as community and stakeholder input indicate that employees of the Zoo, the High School, and other businesses along and near this corridor would benefit from increased and improved bicycle and pedestrian connections to the Riverside, Hollywood, and/or Brookfield Metra stops.

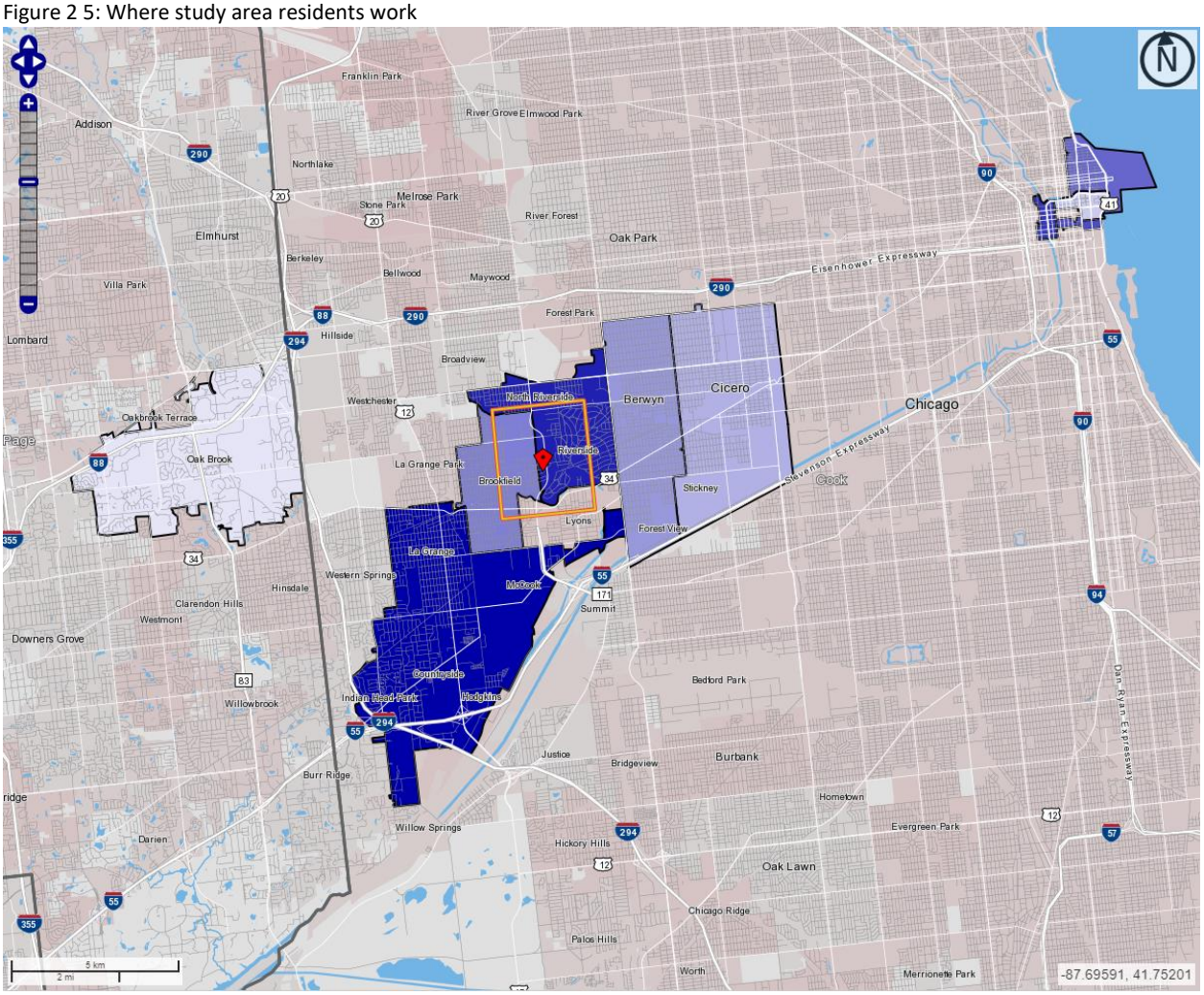
Figure 2.4: Location of jobs in the study area



Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

Figure 2.5 shows where residents of the study area are employed, while Figure 2.6 shows where workers employed within the study area live. Darker blue signifies higher numbers (of jobs and workers). The employment data and analysis indicate that a future Des Plaines River Trail connection between 26th Street and Ogden would be especially useful in providing improved non-motorized access to transit (Metra) and a safe, convenient bicycle and pedestrian route for study area workers traveling to places of employment within or near the study area. Bicycle and pedestrian travel to the employment centers southwest of the study area, in downtown La Grange and along I-55, would benefit less. These trips, in most cases, would require additional and/or improved bicycle and pedestrian connections. Ideally, a future trail along the Chicago Sanitary and Ship Canal (I&M Canal), running southwest from the Chicago Portage Site to the existing I&M/Centennial Trail in Willow Springs – combined with north-south routes into neighboring communities – would provide the "backbone" for these local connections. This exact trail connection is in fact currently being studied in another LTA project, the Village of Justice Centennial / I&M Canal Trail Extension Feasibility Study.

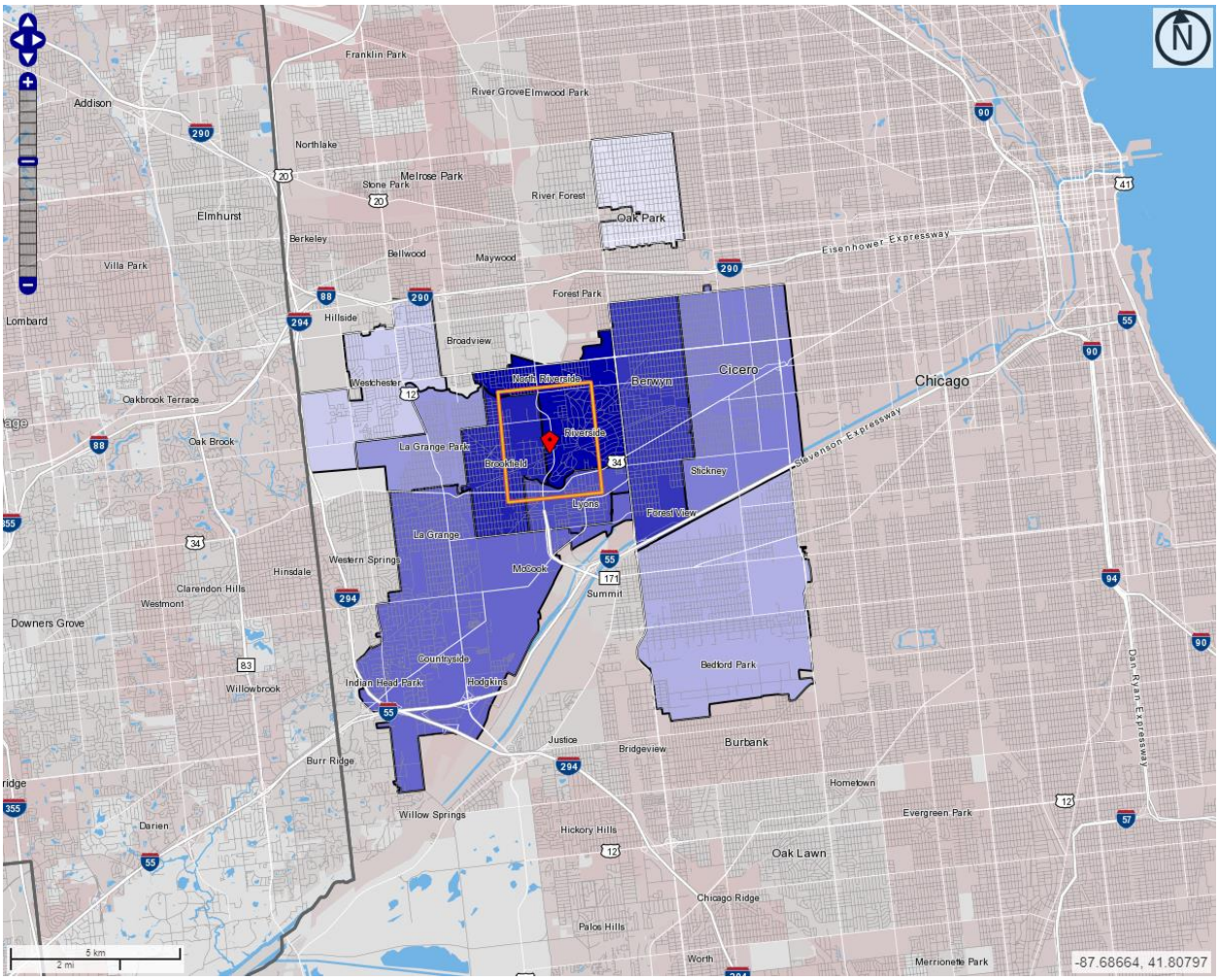
Figure 2 5: Where study area residents work



Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter

Figure 2.6: Where study area workers live
Employment, 2nd Quarter of 2002-2015).

Figure 2 6: Where employees in the study area live



Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

Evidence from around the country suggests that bicycle and multi-use trails can encourage economic activity and development and increase property values in surrounding areas (e.g. https://www.americantrails.org/resources/the-business-of-trails-a-compilation-of-economic-benefits). This effect is most noticeable in areas where major regional trails and robust local bikeway networks converge and connect tail users to established, popular destinations, such as downtown business districts, parks, libraries, museums, stadiums, and/or universities. The destinations serve as anchors and interact synergistically with the trails. The combination (regional trail and major destination) allows trail users to plan longer day trips that include fun, social, and healthy recreation (e.g. a bike ride through forest preserves with family/friends) in conjunction with a visit to the primary attraction – with stops along the way for lunch, other entertainment, or site-seeing. Studies have also shown that people are more likely to stop at local businesses when walking or biking than when driving a car, which further highlights the potential economic benefits of new and expanded multi-use trails.

Within the study area, Brookfield Zoo already serves, to a degree, as an anchor attraction for users of the Salt Creek Greenway Trail. Improving trail connections and bicycle accommodations at the Zoo will further strengthen this function and increase the benefits it provides. Nearby Metra stations, FPDCC properties and facilities, parks, downtown commercial districts, and, further south, the Chicago Portage National Historic Site can also serve as destinations, increasing the use of and the benefits associated with improved trail connections.

Natural resources

The study area contains a wealth of natural resources. Salt Creek and the Des Plaines River are two of the region's most important waterways, and both have retained significant riparian habitat and buffer areas that support local and migratory wildlife and plant species. These corridors, along with the expanded urban forest, provide regionally-significant ecosystem services, including stormwater management, water purification, groundwater recharge, and carbon storage. Virtually the entire study area is included in the Green Infrastructure Vision[1] as a "resource protection area," which highlights the value of these assets.

Most of the natural areas within the study area are owned by the Forest Preserve District of Cook County, though municipal parks are also present. The Forest Preserve District also owns the land containing Brookfield Zoo, and is in the process of acquiring additional parcels in unincorporated Cook County between 39th St. in Lyons and the Des Plaines River, through a buyout program with the Metropolitan Water Reclamation District of Greater Chicago and the U.S. Army Corps of Engineers. The study area is also home to Brookfield Prairie, a 20-acre, FPDCC-owned remnant prairie located just north of the Brookfield Zoo parking lot. This prairie has been identified by the Illinois Natural Areas Inventory as containing "specific suitable habitat for state-listed species or state-listed species relocations."

One species on the Illinois Endangered and Threatened Animals and Plants list—shadbush (*Amelanchier interior*)—has been identified within the study area.

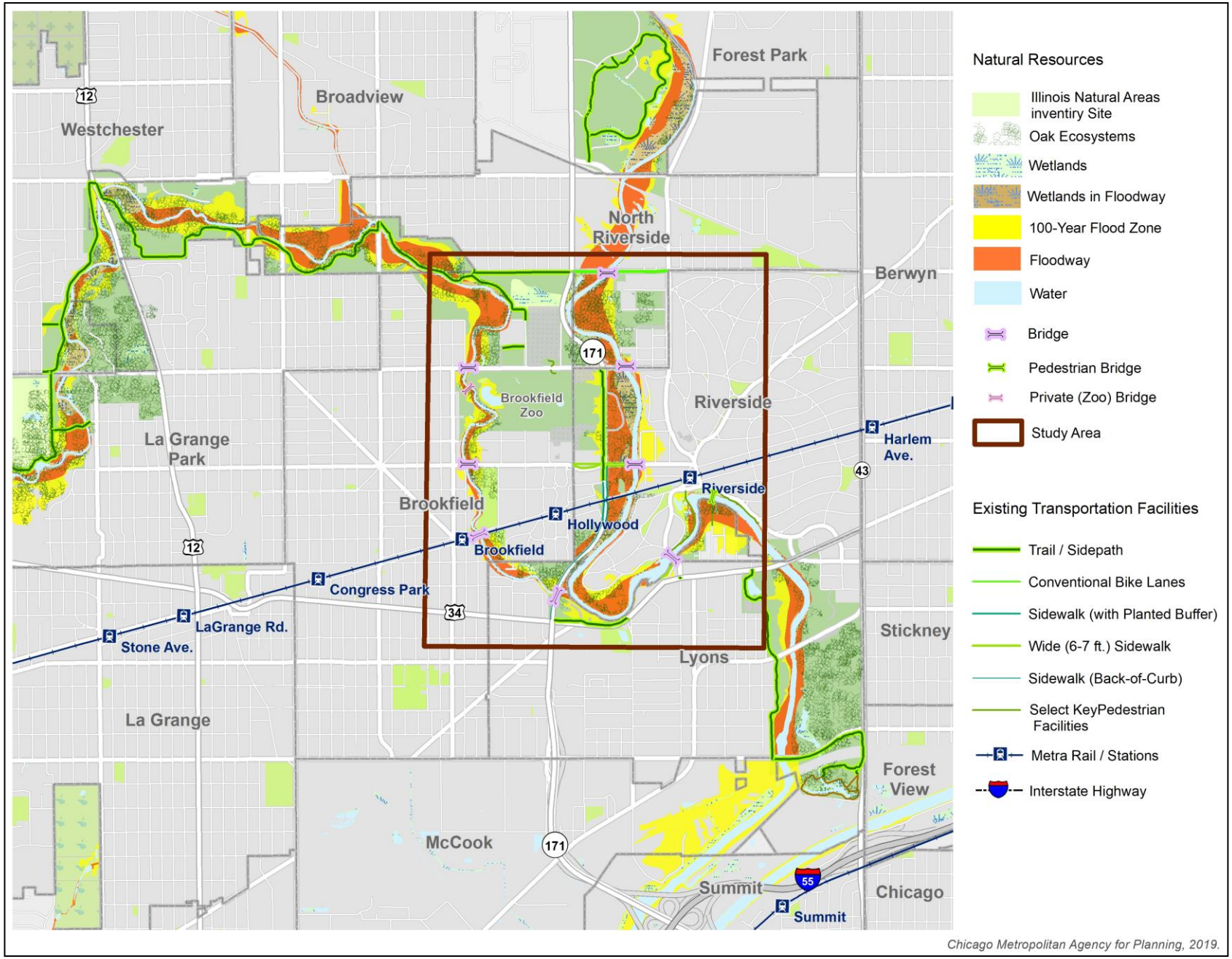
Image 2.7: Hofmann Tower and the Des Plaines River, the site of the former Hoffman Dam

Source: CMAP, 2018

[1] See https://www.cmap.illinois.gov/programs/sustainability/open-space/green-infrastructure-vision

Natural features—especially flood zones—also place significant constraints on development, and more specifically on where and how trail infrastructure can be developed. The one percent annual chance floodplain—commonly known as the 100-year floodplain—refers to areas with at least a one percent chance of experiencing a riverine flood during a given year. These areas play a vital role in preserving water quality in rivers and streams, and are critical to stormwater management, as development in one part of the floodplain typically increases the risk of flooding in other areas. Areas within the floodway are even more important to river health. This designation applies to all areas that are within the main channel of the stream during flood conditions. Certain types of structures, if built in these areas, may experience structural damage during major flood events. However, it is important to note that the floodway of Des Plaines River in the southern part of the project study area was significantly altered by the removal of Hoffman Dam in 2012. Available flood and waterway data (shown in Figures 2.8 and 5.32) do not account for post dam removal status/conditions.

Figure 2.8 Environment and Natural Resources



Transportation

The study area is home to a diverse mix of transportation options, including three Metra stations (BNSF), three Pace fixed-route buses, one Illinois State Route, one U.S. Route, and dozens of local and arterial roads. Local streets in Brookfield, Lyons, and North Riverside follow a regular grid alignment, which provides local traffic, including bicycles and pedestrians, with multiple route options for intra-village travel. Unlike the other three communities, Riverside was built with a distinct curvilinear street system, with unique intersection designs, which in some situations may increase vehicular speeds and discourage bicycle and pedestrian travel.

At a more regional scale, Salt Creek and the Des Plaines River create significant barriers to travel between communities. Within the study area, there are four bridges crossing the Des Plaines River that are open to vehicular (and, with varying degrees of accommodation, bicycle and pedestrian) travel, and one bridge open exclusively to pedestrians. There are five additional bridges crossing Salt Creek. These bridges not only have the potential to create bottlenecks during peak demand hours and inclement weather, but also pose significant challenges for expanding bicycle and pedestrian infrastructure, due to limited room for additional sidewalks, side paths, and bike lanes on existing structures.

Approximately 78 percent of residents in the study area drive alone to get to work, compared to 10 percent who take public transportation, and 3 percent who walk, bike, or use other means (Table 6). Notably, these numbers include only primary modes of transportation, so it is possible that commuters who carpool or use public transportation are also walking or biking for part of their trip. Transportation infrastructure and issues are discussed in greater detail in Section 5, below.

Table 6: Mode of travel to work

	Brookfield		Lyons		North Riverside		Riverside		All Communities	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Drove alone	2,747	65.7	2,566	79.0	3,970	81.9	7,483	80.1	16,766	77.6
Carpool	203	4.9	406	12.5	313	6.5	468	5.0	1,390	6.4
Public transportation	884	21.1	102	3.1	286	5.9	831	8.9	2,103	9.7
Walked	47	1.1	23	0.7	126	2.6	96	1.0	292	1.4
Taxi, motorcycle, bicycle, or other	57	1.4	10	0.3	76	1.6	162	1.7	305	1.4
Worked from home	246	5.9	142	4.4	77	1.6	298	3.2	763	3.5

Source: 2016 American Community Survey, five-year estimates.

Table 7: Vehicle availability by household

	Brookfield		Lyons		North Riverside		Riverside		All Communities	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
No vehicle available	61	1.5	101	3.1	102	2.1	115	1.2	379	1.8
1 vehicle available	1,146	27.4	680	20.9	1,578	32.5	1,914	20.5	5,318	24.6
2 vehicles available	2,042	48.8	1,411	43.4	1,616	33.3	4,269	45.7	9,338	43.2
3 or more vehicles available	935	22.3	1,057	32.5	1,552	32.0	3,040	32.6	6,584	30.5

Source: 2016 American Community Survey, five-year estimates.

Section 3. Relevant Plans, Studies, and Initiatives

This section provides an overview of existing plans, studies, and reports relevant to the Des Plaines River Trail, South Extension Planning Study. The plans included in this section were created by the various municipalities in the study area, as well as the Forest Preserve District of Cook County, and various advocacy groups. The content of these plans will inform both the planning process itself, and the final recommendations of the extension project.

Plans reviewed

- Des Plaines River Trail Coalition (On-going)
- Des Plaines River Trail: Southern Segment Corridor Plan: Touhy to North (2018)
- Trail Connect Chicagoland Vision Plan (2018)
- Brookfield Comprehensive Plan (2018)
- Brookfield Active Transportation Plan (2017)
- Village-Wide Traffic Study for the Village of Riverside, Illinois (2017)
- Lyons Comprehensive Plan (2015)
- FPDCC Trail Master Plan (2014)
- FPDCC Recreation Master Plan (2013)
- Village of Riverside Central Business District Plan (2013)
- West Central Municipal Conference Bike Plan (2012)

Key Findings

- Existing plans in the study area emphasize the importance of improving and expanding bicycle and pedestrian infrastructure and increasing bicycling and walking for transportation and recreation.
- Multiple plans and reports have highlighted the importance of developing a trail along the Des Plaines River corridor (though no specific alignment was identified).
- The villages of Brookfield and Riverside have both identified community connector routes for bicycle travel. These are 31st Street and Washington Avenue in Brookfield and Forest Avenue/Riverside Road/Barrypoint Road/Millbridge Road in Riverside.
- There is a strong tradition of multi-jurisdictional planning in the study area, especially around active transportation issues.

Des Plaines River Trail Coalition

This project, undertaken as one initiative within the broader Trail Connect Chicagoland campaign, is also led by the Active Transportation Alliance (Active Trans) and seeks to bring residents and elected officials together to develop a plan for improving the Des Plaines River Trail in Central Cook County between Touhy Avenue and North Avenue. Currently, this section of the trail faces a number of challenges, including persistent flooding and erosion, poorly-connected access points, and numerous, potentially

dangerous road crossings. Strong local support to address these challenges, combined with a recognition of the importance of the Des Plaines River Trail in the regional system, led Active Trans to select the southern segment (Touhy to North) as one of its four initial target areas for the Trail Connect Chicagoland campaign. Two newly-formed groups – and intergovernmental coalition and the Friends of the Des Plaines River & Trail – will support the project. Coalition activities include an ongoing phase 1 engineering study for the entire corridor, help getting individual trail improvement projects off the ground, bringing awareness and building support for the need for trail improvements among elected officials, nearby businesses, and community residents.

The Coalition recently produced the Des Plaines River Trail: Southern Segment Corridor Plan, which focuses on the segment from Touhy Avenue to North Avenue. The plan is an important project because it sets a precedent for bringing together several communities to plan for the future of the Des Plaines River Trail, which is a central objective of the current project in the Brookfield-Lyons-Riverside area.

Trail Connect Chicagoland and Vision Plan (2018)

Trail Connect Chicagoland is a new, comprehensive advocacy campaign led by the Active Transportation Alliance. The goals of the campaign are outlined in the 2018 Trail Connect Chicagoland, Linking Our Regional Trails Vision Plan, which highlights the impact that trails have on regional quality of life, provides an overview of the current state of the region's trails, outlines the Active Trans' vision for a unified trail network, and details steps for making the network a reality. Through Trail Connect Chicagoland, Active Trans hopes to:

- Build a collective vision for a connected regional trail network
- Create a Regional Trail Coalition for advocates and leaders to coordinate on advocacy across Chicagoland
- Lead grassroots organizing and technical assistance to close priority gaps in the network
- Advocate for low-stress biking and walking connections between local communities and their trails
- Provide trail advocates the tools, training and support they need to successfully advocate for their own local priorities

The Vision Plan specifically highlights this project's study area as a missing link in the regional system, and the larger southern Des Plaines River corridor is included in the plan's list of initial targeted, high-priority gaps that should be addressed in the near term (construction beginning with four years). Once completed, the southern segment of the Des Plaines River Trail (which includes the study area) will connect local residents and through riders to a number of regional trails, including the Salt Creek Trail, the I&M Canal Trail, and the popular Des Plaines River Trail, which extends north to the Illinois-Wisconsin border.

Des Plaines River Trail: Southern Segment Corridor Plan (Touhy to North)

This Active Transportation Alliance plan, published in December 2018, focuses on improvements to the Des Plaines River Trail between Touhy Avenue and North Avenue, roughly 10 miles north of the study area. The Active Trans plan seeks to address the persistent challenges identified by Coalition stakeholders, including the intergovernmental coalition and the Friends of the Des Plaines River & Trail, and field study, including flooding and erosion, safety concerns related to road crossings, trail maintenance issues, and trail access. The plan also addresses user experience issues, such as markers, wayfinding, and comfort stations.

To address these challenges, the plan highlights a number of action issues, and identifies potential project leads for implementation, including IDOT, local municipalities, and community groups. Notably, the planning process itself brought together a wide range of stakeholders, and may serve as a precedent for the Des Plaines River Trail, Southern Extension Planning Study.

Brookfield Comprehensive Plan (2018)*

The Village of Brookfield adopted its most recent comprehensive plan, designed to support the long-term regional goals outlined in GO TO 2040, in January 2018. The plan's central goal is to provide a clear vision for how the village should develop during the next 10-20 years.

The Comprehensive Plan features four subarea plans, two of which are relevant to the Des Plaines River Trail Extension project: 31st Street Corridor and Downtown Brookfield. The plan envisions 31st Street remaining a minor arterial supporting a mix of residential and neighborhood-scale commercial uses. The plan supports the preservation and dedication of a right-of-way for construction of bus shelters and a sidewalk or sidepath. Downtown Brookfield, which includes parts of Brookfield Avenue, is envisioned as a mixed-use, pedestrian-oriented neighborhood. To realize this vision, the plan calls for extending a riverwalk or trail along the eastern shore of Salt Creek, which will extend from 31st Street in the north to Brookfield Avenue in the south, at which point it will either go underneath the road and railway, or detour west to Burlington Avenue, and cross the river via a proposed pedestrian bridge in Creekside Park.

Brookfield Active Transportation Plan (2017)

This active transportation plan was created by the Active Transportation Alliance, in collaboration with local residents, Village Officials, and other stakeholders. The plan highlights the popularity of public transportation and walking and biking in the Brookfield area, and establishes the central goal of making the Village of Brookfield a regional leader for walking, biking, and transit access.

Specifically, the plan calls for the addition of curb bump-outs, raised intersections, crosswalk improvements, bicycle lanes and boulevards, and other pedestrian amenities throughout the village. The plan's Proposed Active Transportation Network map also calls for the addition of bike lanes to Washington Avenue, a side path on 31st Street, and, improved connections between 31st Street and the Lower Salt Creek Trail, among other projects.

Village-Wide Traffic Study for the Village of Riverside, Illinois (2017)

This traffic study, conducted in 2017, sought to examine existing operations within the village, identify potential challenges, and develop a plan for improving transportation operations. To this end, the report provides a detailed inventory of the village's transportation system, including transit infrastructure, local and regional roadways, bicycle and pedestrian facilities, and traffic control devises.

The Village of Riverside's curvilinear street system has very few right angle intersections, which presents several challenges for bicycle and pedestrian travel, including longer crossing distances and (potentially) higher speed turning movements. The community also features three State Routes—Harlem Avenue, Ogden Avenue, and 1st Avenue—that experience significant congestion, and have higher speed traffic

* Funded through CMAP's Local Technical Assistance program

and fewer opportunities for safe crossings. Additionally, several local roads experience relatively high traffic volumes, likely a sign that they are functioning as collector roads during times of congestion. Finally, the village is home to the BNSF railway, which connects Riverside to both Chicago and Aurora.

Among other recommendations, the report suggests converting the Riverside Road/Miller Road/Lionel Road corridor from a local road to a collector road, which may impact the corridor's viability as a bicycle route (it is currently part of the Olmstead Route). The report also recommends adding additional stop and/or yield signs to 30 intersections, and proposes the village adopt a blanket, 25 mph speed limit. Curb extensions, expanded medians, and other traffic-calming strategies are also highlighted in the report.

Lyons Comprehensive Plan (2015)*

The Lyons Comprehensive Plan was adopted by the Village Board in 2015. The plan builds upon previous planning and policy initiatives that focused on economic development and strategic planning, and adds a new emphasis on pedestrian and bicycle facilities.

Within the study area, the plan identifies two "commercial nodes" for more intensive commercial and residential development: the intersection of Ogden Avenue, 1st Avenue, and Plainfield Road, and the intersection of Ogden Avenue and Joliet Avenue. The plan also calls for future studies to assess the need for widening Ogden Avenue from four lanes to five, with a center turn lane. Finally, the plan calls for expanding water-based recreational uses near the former Hoffman Dam site.

The plan document provides detailed information on historical bicycle crash data, and highlights Ogden Avenue as a planned bicycle route. Generally, the plan seeks to encourage bicycle and pedestrian-friendly development, and encourages future transportation projects to strike a balance between vehicular travel and active transportation options.

FPDCC Trail Master Plan (2014)

The Forest Preserve District of Cook County (FPDCC) completed their Trail Master Plan as a follow-up to their 2013 Recreation Master Plan. As stated in the plan document, the overarching goal of the plan is to "improve the user experience and identify opportunities to ensure a safe and easy-to-navigate trail system." The document itself contains a detailed inventory of the District's trail system as of March, 2014, as well as a list of recommendations for system management and expansion. As of 2014, the FPDCC trail system contained 347 miles of trails, including 146 paved miles.

The plan includes clear guidelines for signage and trail design, which is highly relevant to this project. The plan also highlights the importance of expanding the system to connect to regional trail network, improve safety at road crossings, improve access to destinations, and sharing costs, among other expansion goals. All of these criteria are applicable to the DPRT south extension project.

FPDCC Recreation Master Plan (2013)

The Forest Preserve District of Cook County (FPDCC) released in Recreation Master Plan in March of 2013. The document was designed to provide both a comprehensive vision, and an actionable list of

* Funded through CMAP's Local Technical Assistance program

strategies, to guide the development of new and expanded recreational opportunities. The plan also includes a set of decision-making tools that are intended to guide capital and operating investment decisions during the next 5-10 years.

Public outreach conducted as part of the plan's development processes found a high level of support among Cook County residents for hiking and biking trails, picnic opportunities, water-based activities, and winter activities. The DPRT South Extension Project could include most or all of these uses. The report describes trails as one of the District's most popular and universally appreciated features, and states that the system is generally in good repair, but that several key connections are missing. Additionally, trail-specific recommendations are included in the follow-up Trails Master Plan, which was completed in 2014.

Village of Riverside Central Business District Plan (2013)*

This central business district (CBD) plan was adopted by the Village Board in April of 2013. The plan's study area—Riverside's (CBD)—includes the commercial areas surrounding the Riverside Metra Station, roughly extending from the Des Plaines River in the south, to Kimbark Road in the west, and St. Mary's Church in the north and east.

The plan envisions the CBD remaining a walkable, mixed-use area, and calls for a number of pedestrian-oriented amenities to encourage foot traffic. Specifically, the plan calls for improved crosswalks, sidewalks, and lighting, in addition to new street trees, murals, and wayfinding signs. The plan also calls for improving connectivity between the CBD and the Des Plaines River.

West Central Municipal Conference Bike Plan (2012)

This bicycle plan was created by the Active Transportation Alliance for the West Central Municipal Conference (WCMC), a membership-supported Council of Governments representing 40 municipalities, five townships, two community colleges, and one zoo. The plan is intended to provide a unified strategy for improving bicycle safety within and between WCMC communities. Plan recommendations focus on regional facilities, rather than site-specific designs and alignments.

The plan highlights both the 31st Street corridor and the Des Plaines River and Salt Creek Trails (north of the study area) as high priority bicycle corridors. 31st Street in particular is highlighted as a small, but important link in the regional system, due in part to its connection to the Brookfield Zoo, one of the WCMC region's most popular destination. The plan states that the road, which has four, undivided travel lanes and an ADT count of between 12,000 and 14,000, is not currently well suited for on-street bicycle traffic, but that right-of-way would appear to permit installation of sidepath.

* Funded through CMAP's Local Technical Assistance program

Section 4. Outreach

A crucial element in the Des Plaines River Trail, South Extension Planning Study is to engage partner communities and key stakeholders throughout the study process, in order to obtain and incorporate their input. To this end, the project will establish a robust working relationship and shared vision for the future Des Plaines River Trail between the project sponsor, study area communities, and key community stakeholders – including potential funding and implementing agencies. The project's community and stakeholder engagement process will establish ongoing dialogue and a collective understanding of constraints, opportunities, and potential solutions for the development of the trail within study area boundaries. The goal of the outreach is to gather meaningful community and stakeholder feedback, information, and insight into any factors that might affect trail alignment and, more importantly, implementation.

The technical nature of this study, as well as the narrowly defined geographic corridor that the study focuses on, make it imperative that potential trail implementers be involved from the beginning of the project. Formation of the project core team and steering committee, as well as the identification of key stakeholders, who were interviewed in the first stage of outreach, reflect this imperative. This will help ensure that the recommendations developed for the study have the right information to support implementation. To provide mechanisms for meaningful outreach that reach different segments of the diverse community that comprise the study area, the project team has implemented several approaches for the existing conditions phase of public participation. Strategies have included establishing the core team and steering committee, field visits, a steering committee meeting, and key stakeholder interviews, as well as informal, on-site interviews with residents and existing trail users. As the project moves from the existing conditions outreach phase to the potential key recommendations, CMAP staff will continue to engage community representatives and project stakeholders, as well as groups and individuals that may not yet have been reached through additional activities, online and on-site.

Project Initiation and Initial Outreach

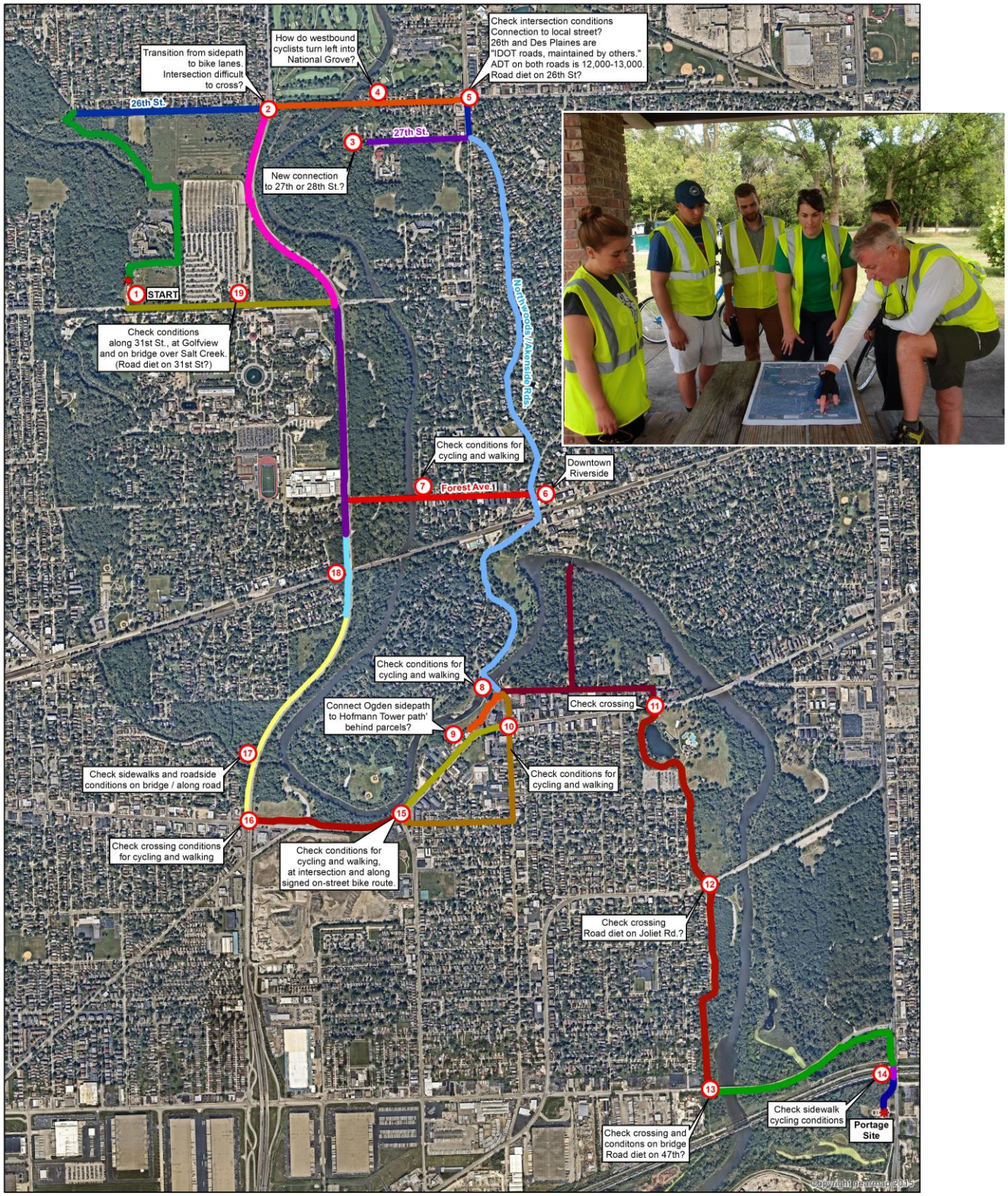
Prior to project kickoff, CMAP staff conducted several interviews (in Summer 2018) with various governmental partners including supervisors, management and planning staff for all four municipalities. These interviews confirmed interest in the project and led to the concept of a core team and a multi-jurisdictional/agency steering committee, whose involvement will be especially important in making the project successful.

A core team, comprised of the project sponsor (FPDCC) and the four study area communities (Riverside, Brookfield, Lyons, and North Riverside), was formed to lead the project. These entities represent crucial potential partners for pursuing further study and/or funding to design and build the Des Plaines River Trail within the study area. They will work closely with the steering committee and key stakeholders, who include implementing and regulatory agencies, as well as advocacy organizations and local residents.

In July 2018, the core team held an internal kick-off meeting to discuss project scope and the formation of a project steering committee. The meeting included the project sponsor and the study area communities. At the meeting, steering committee members and key stakeholders were identified. Next steps were also discussed, including the project's outreach strategy.

Members of the core team took part in a bicycle tour of the study area, in order to get a “handlebar’s view” of the area. The tour covered approximately 18 miles, on existing trails and roadways. Along the tour, the team visited key locations in order to identify challenges, opportunities, important connectors, and possible routes.

Figure 4.2: Study Area Bike Tour – Annotated Route Map



Source: CMAP

Key findings of the tour include: safety and comfort concerns with narrow, "back-of-curb" sidewalks, especially along 1st Avenue, south of Waubansee Road, and along Ogden Avenue; lack of adequate bicycle accommodation at the intersection of Des Plaines Avenue and 26th Street; difficult crossings for Cermak-Ottawa Woods Trail users at Ogden Avenue, Joliet Road, and 47th Street; challenging conditions – especially for less experienced or confident bicyclists – along on-street trail segments in the Village of Lyons (where current routing includes three crossings of Ogden Avenue); poor condition of, and obstructions in, some sidewalks; lack of clear signage at the junction of 9th Avenue/26th Street and the Salt Creek Greenway Trail.

Steering Committee

The primary role of the steering committee is to guide and inform the study process and to provide input on the development of key deliverables. Over the course of the project, the steering committee will meet 4-6 times. In addition to meetings and the review of project documents, steering committee members will help CMAP and the core team identify and reach key stakeholders, and spread the word about the study and opportunities for engagement and input. Steering Committee members' involvement, contributions, and assistance are a key part of the process and will be crucial to the success of this project.

At the first Steering Committee meeting, CMAP staff reviewed project scope and presented preliminary information and analysis of existing conditions. In a small group mapping activity, committee members identified and discussed strengths, weaknesses, opportunities, and threats to the development of the trail within the study area. Committee member comments and map notations were latter aggregated and summarized – see Figure 4.3.

Stakeholder Interviews

The project team carried out one-on-one interviews with select steering committee members and key stakeholders, who represent permitting agencies and/or have knowledge that was seen as important for initial research on and understanding of existing conditions and stakeholder viewpoints. Key themes that emerged were strong and consistent support for the trail among all stakeholders; the need to balance community and FPDCC goals of habitat preservation, passive and active recreational opportunities, safety, and transportation; the acknowledgement and desire to capitalize on significant recent investments in bicycle and pedestrian accommodation within the study area; and the need to understand and incorporate previous planning efforts.

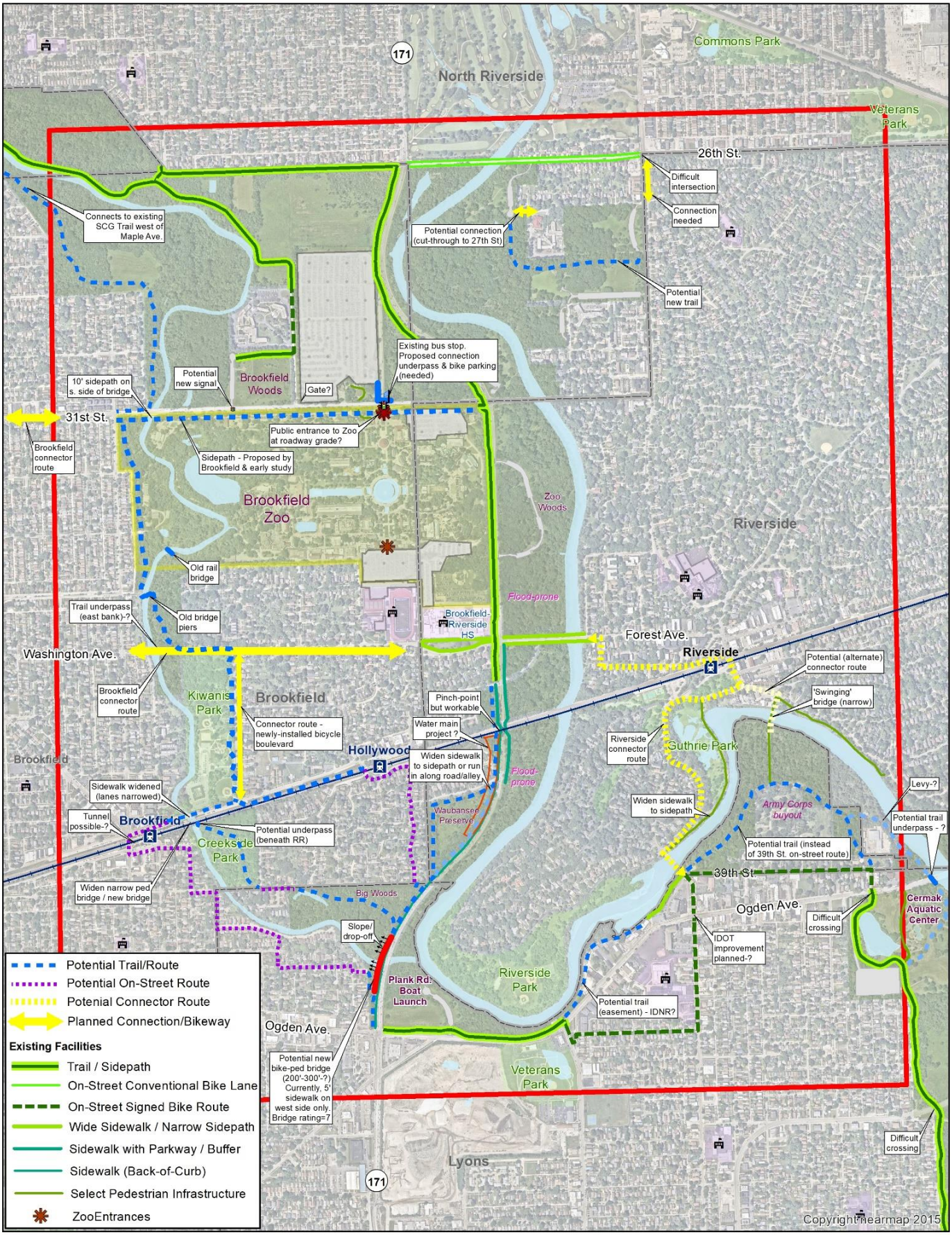
CMAP Project Webpage

A project webpage for the plan is located under CMAP's Local Technical Assistance program (LTA) webpage at https://www.cmap.illinois.gov/programs/LTA/des-plaines-river-trail-study. The project page introduces the plan and study area as well as why the study is taking place. It details the planning process, public engagement, plan timeline, and project partners.

Future Outreach

Outreach will be ongoing as the study continues and moves toward a final report. Focus group meetings, pop-up appearances at events, informal trail intercept surveys will be considered as potential ways to reach specific or general audiences and inform them about the plan and solicit their input. An interactive website will be created in early 2019 to encourage residents and other community stakeholders to provide their feedback on general topics related to trails and trail use, as well potential challenges to trail routing/development, opportunities for trail routing/development, key or important destinations, and major barriers for bicycling and walking. The site will consist of survey questions and an interactive mapping element for participants to identify assets and challenges.

Figure 4.3: Steering Committee – Study Area Map Input



Section 5. Transportation Infrastructure

The study area location, approximately 11 miles southwest from downtown Chicago, is well served by the region's transportation network. Illinois Route 171 (1st Avenue) runs roughly adjacent and parallel to the Des Plaines River in the study area. It is a major north-south arterial, connecting to Interstate 290, north of the project area, and to Interstate 55, to the south. U.S. 34 (Ogden Avenue), an important commercial and industrial corridor, runs east-west along the southern boundary of the study area, connecting communities and providing access to Interstate 294, approximately 4 miles to the west. Local road networks take the form of relatively compact rectilinear and curvilinear grids, and provide excellent connectivity within and between communities and nearby destinations. See Figure 2.1, above.

The area is also well-served by commuter rail and Pace bus. Metra's BNSF Railway line, connecting downtown Chicago and Aurora, runs through the study area, with stations in Riverside, Hollywood Avenue (Brookfield Zoo Stop), and Prairie Avenue in Brookfield. Three Pace bus routes traverse the study area. See Figure 5.10, below.

The study area also represents an important node for the regional trail system and bicycle routes, with the potential to greatly increase this significance through the completion of the Des Plaines River Trail. The Salt Creek Greenway Trail enters the study area from the west. Recent investments by IDOT, Cook County DOTH, the FPDCC, and study area communities along 1st Avenue and 26th Street have expanded and enhanced the network within the study area. North of the study area, in Forest Park, the Des Plaines River marks the eastern terminus of the Illinois Prairie Path. Just south of the study area, the Cermak-Ottawa Woods Trail extends nearly two miles to the Chicago Portage National Historic Site. The Villages of Riverside and Brookfield have both developed bicycle plans and implemented projects. The FPDCC recently launched HOPR Bike Share, system-wide across its preserves. HOPR bikes are available at two locations in the study area, Brookfield Woods and Cermak Woods, providing residents and visitors with an additional recreational and transportation option.

Figure 5.1: HOPR Bike Share at Brookfield Woods

Key findings

- **New trail segments in the study area have recently been built, but significant gaps still exist.** Recently constructed shared-use sidepaths along 1st Avenue and 26th Street provide safe connections to the Salt Creek Greenway Trail and (for residents of North Riverside) to Riverside-Brookfield High School. However, the sidepath's southern terminus, at Parkview Avenue, lacks a connection to trail segments further south, along Ogden Avenue and beyond.
- **Aside from trails, existing local bikeway infrastructure in study area communities is limited.** Designated bicycle routes in the Village of Riverside are marked only by small arrows. Conventional bike lanes exist on 26th Street, between 1st Avenue and Des Plaines Avenue in the Village of North Riverside, and the Village of Brookfield recently installed "Bicycle Boulevard" markings on Arden Avenue (between Washington Avenue and Brookfield Avenue).
- **Community and stakeholder outreach indicates that an off-street trail, where feasible, is preferred to an on-street route.** While designated on-street routes are seen as crucial for local

networks and community connections**,** the desire to provide a safe and comfortable experience for all potential trail users – including families with children, students riding to school, less experienced or confident cyclists riding for transportation and recreation, as well as runners and hikers – indicates that off-street separated facilities (trails and sidepaths) should be prioritized in developing potential alignments for the Des Plaines River Trail.

- **Currently, the Salt Creek Greenway Trail in Lyons consists of an on-street, signed route that includes several difficult crossings and presents significant wayfinding challenges.** The Salt Creek Greenway Trail in Lyons is a circuitous, intermittently signed on-street route. Cyclists following this route must cross Ogden Avenue three times in the course of 1 mile – including a difficult crossing at an uncontrolled location.

- **Parks, preserves, and other open space along Salt Creek and the Des Plaines Rivers present opportunities for trails, but also constraints.** Open space along waterways within the study area represent ideal places for trails. However, adjacent land uses and private property, the need for multiple crossings of the river and roadways, flooding, wetlands, erosion, and other environmental concerns present major challenges to building trails within riverine terrain in constrained, urban areas.

- **Acquisition of parcels in unincorporated land north of 39th Street offers an opportunity for a future trail in this area.** The Army Corps of Engineers, together with the Metropolitan Water Reclamation District, are in the process of acquiring properties on land within the floodplain between 39th St. and the Des Plaines River, north of Lyons. It is anticipated that this land will be transferred to the FPDCC, which already owns adjacent properties, creating an opportunity for future trail development.

- **The removal of Hoffman Dam in 2012 has changed the course of the Des Plaines River, just upstream, which presents new opportunities for trail development.** Dam removal has resulted in lower water levels (and changes in the floodplain as well) in the reach of the Des Plaines River southwest of Millbridge Road bridge. The lower levels have exposed land on the south bank behind properties along Ogden Avenue, where a new off-street trail connection could be made.

- **A connection to Brookfield Zoo is an important goal for potential trail alignments**. The Zoo represents a major regional destination at the heart of the study area. Given its size, the need for a secure perimeter and limited entry points, and its impact on transportation and traffic in the area, the Zoo also presents constraints for trail routing.

- **Multi-lane, high-volume, high-speed roads, rail lines, waterways, and difficult crossings present significant challenges for the development of a safe, low-stress trail and community connectors within the study area.** First Avenue, Ogden Avenue, 31st Street, Woodside/Des Plaines Avenue, and (to a lesser extent) Forest Avenue, Washington Avenue, Brookfield Avenue, Riverside Road, Millbridge Road/Joliet Avenue present challenges for many cyclists. Crossing locations along the BNSF rail line and over Salt Creek and the Des Plaines River are limited and can be difficult for bicyclists and pedestrians.

- **Recent investments in bicycle and pedestrian accommodation on bridge structures provide opportunities for future connections.** IDOT fairly recently reconstructed the bridge carrying 31st Street over Salt Creek. As part of reconstruction, IDOT included a 10-11 foot wide sidewalk on the south side of the bridge to accommodate two-way bicycle and pedestrian traffic and to provide for future connections along 31st Street.

- **Study area communities and key stakeholders are firmly committed to improving conditions for bicycling and walking and to creating the Des Plaines River Trail.** Outreach to-date indicates that area residents, Village officials and staff, and key community organizations are eager to create a safe, direct, family-friendly trail within study area boundaries, as well as community connector routes that link.

Transportation Network

Transportation infrastructure plays a central role in defining this project. Roadways and existing trails – together with the rivers and community boundaries – establish the study area's boundaries and define the potential trail connections that will be explored and evaluated. At the same time, transportation infrastructure designed primarily for motor vehicles presents challenges to safe, comfortable, and convenient travel by bicycle and by foot. Rail lines, wide, busy roads, and long distances between safe crossings are barriers to walking and bicycling, and exist within the study area. The transportation network is vital to the life of the communities within the study area, surrounding communities, and the region as a whole.

The sections of this chapter were developed with the goal of identifying potential alignments for the Des Plaines River Trail and community connector bicycle routes firmly in mind. The overview of bicycling, walking, transit, and roadway characteristics is intended to assist the project team in understanding conditions relevant to creating and improving trail connectivity within the study area.

Bicycling

The study area abuts endpoints of two major regional trails: the Salt Creek Greenway Trail (southeastern terminus) and the Cermak-Ottawa Woods Trail (northern terminus). The Salt Creek Greenway trail extends for approximately 32 miles west and north to Ned Brown (Busse Woods) Preserve in Elk Grove Village. The Cermak-Ottawa Woods trail, which extends approximately 2 miles south along the Des Plaines River to the Chicago Portage National Historic Site, constitutes the southernmost segment of the Des Plaines River Trail. These two trails, and the corridors in which they are located, represent crucial elements in the regional trail network. Their completion and, where needed, improvement are high priorities for CMAP, the FPDCC, and many other agencies and organizations.

Over the past several years, state, county, and local agencies have worked together to design and construct connections to, and potential segments of, these existing regional trails within the study area. From 2014-2017, new trail segments were constructed as sidepaths 1) along 26th Street between the Salt Creek Greenway Trail and 1st Avenue, and 2) along 1st Avenue, from 26th Street south to Parkview Avenue (near Riverside-Brookfield High School). At the same time, the FPDCC completed a trail segment (sidepath) along Odgen Avenue between 1st Avenue and Lawndale Avenue (where the trail currently becomes an on-street route). As part of bridge reconstruction, IDOT included shared-use accommodation (10'-11' sidepath, protected by a barrier wall) on the south side of the bridge carrying 31st Street over Salt Creek, in anticipation of a future trail connection. This connection is specified in local (Village of Brookfield) and sub-regional (WCMC) plans. In order to advance the realization of this connection, the Village of Brookfield recently applied for and received funding from Cook County's Invest In Cook program for a "31st Street Multimodal Impact Study," which will focus on improving safety at the intersection of Maple Avenue and 31st Street, and studying the feasibility and preferred alignment for a shared-use path along 31st Street, between Prairie Avenue and the Zoo/1st Avenue.

Study area municipalities have also worked individually to create better conditions for bicycling, by designating and marking local bike routes that connect to existing regional trails and important nearby destinations. The Village of Riverside has designated three bicycle routes, named after famous

individuals associated with Riverside's history: the Frederick Law Olmsted Route, the Frank Lloyd Wright Route, and the John F. Palmer Route. Parts of these routes are marked with route signs, albeit minimally and sporadically. All the routes converge in the downtown business district, which constitutes a key destination and activity center within the study area.

Figure 5.2: Riverside Bike Routes Map (http://riversidechamber.us/wp-content/uploads/2014/05/Riverside-Map-2017-v1.pdf)

The Village of Brookfield recently adopted an Active Transportation Plan. This plan, summarized in Section 3 above, recommends many projects and strategies to improve conditions for cycling and walking. Recently, the Village of Brookfield took initial action to implement the plan by installing "Bicycle Boulevard" pavement markings and signage, together with traffic calming, pedestrian safety treatments, and ADA improvements. This project represents one of the first bicycle boulevard projects in the Chicagoland region. The Village is currently planning to install conventional bike lanes along Washington Avenue.

Figure 5.3: Village of Brookfield Bicycle Boulevard

Source: Nearmap

The Village of North Riverside recently installed bike lanes on 26th Street, between 1st Avenue and Des Plaines Avenue. This creates a connection over the Des Plaines River to the Salt Creek Greenway Trail and the new facility (sidepath) along 1st Avenue. Unfortunately the bike lanes end abruptly at Des Plaines Avenue without a strong connection to Riverside or the eastern half of North Riverside. North Riverside has also installed a limited number of bike route signs.

Figures 5.4-5.7: Bicycling conditions in Riverside (top) and North Riverside (bottom)

Source: Google Maps

The Village of Lyons has collaborated with the FPDCC and trail stakeholders to install signage along the Salt Creek Greenway Trail, where the trail route currently runs on local streets (see Figure 5.10). In addition, as part of the development of the Riverwalk Condominiums and Senior Residences (adjacent to Hoffman Tower), the Village collaborated to create a short segment of trail (approximately 600 ft.) within Riverwalk Park.

Figure 5.8-5.9: Bicycle conditions in Lyons

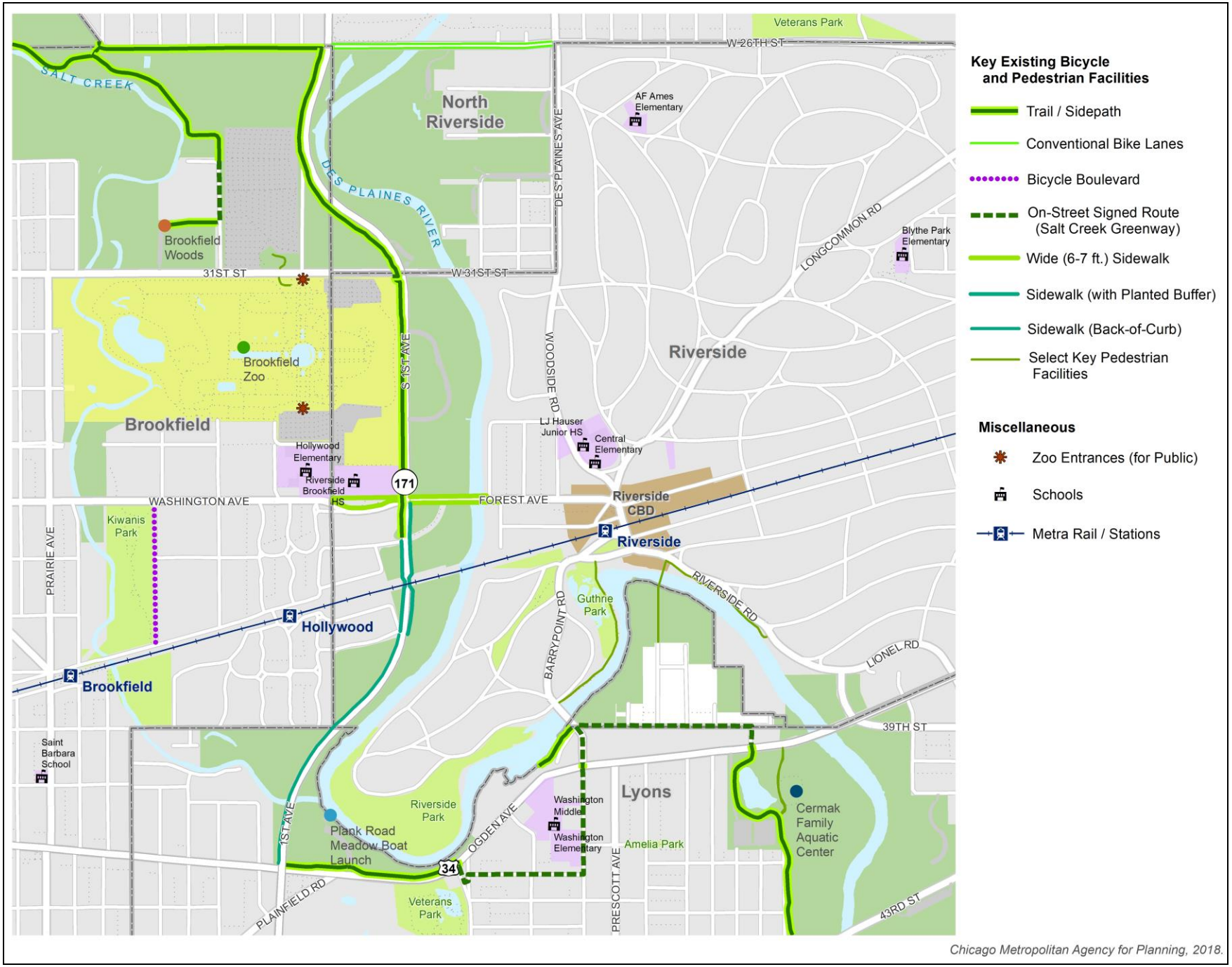
Source: Google and Nearmap

Although we do not have detailed or comprehensive data on bicycle mode share for most trips, the U.S. Census, American Community Survey does have information on commute trips. Data shows that approximately 435 people in the four study area municipalities indicated that their primary means of travel to work was bicycling or walking. Many more residents bicycle and walk to transit. According to a Metra surveys from 2016, 4%-6% of Metra riders access the Brookfield and Riverside stations by bicycle.

Issues and difficulties encountered by cyclists within study area echo concerns (or the types of concerns) commonly raised throughout the region. Some examples include:

- Difficulties encountered in crossing large, multilane roads with high-speed, high-volume traffic
- Limited crossing opportunities over the BNSF rail line, Salt Creek, and the Des Plaines River
- Inadequate bicyclist access to the Zoo (especially the north entrance)
- Incomplete and poorly maintained signage along designated bicycle routes
- Lack of pavement markings and regulatory signage to indicate bicycle routes/lanes, the presence of bicyclists, and bicyclist position in the roadway
- Discomfort with on-street (trail) routes, especially when riding recreationally with children or with less experienced or confident cyclists
- Poor roadway surface conditions
- Inadequate or substandard bicycle parking at key destinations (e.g. Zoo and downtown commercial areas/Metra stations)

Figure 5.10: Key Existing Bicycle and Pedestrian Facilities



Pedestrian Environment

Walkability is an important factor in the health and vitality of our communities. Elements of a walkable community or neighborhood typically include a central attraction, main street, and/or public space(s); buildings close to the street, and complete streets designed for safe travel for all modes – foot, bicycle, transit, and car. Housing density, access to amenities, stores, parks, and places of work are also important. Many planners refer to the "D's" of walkability: density, diversity, design, as well as destination access and distance to transit.

Quality of the walking environment

Having the ability to walk to accomplish errands or to reach a variety of amenities is good for personal health, the environment, and for household cost savings. The website WalkScore.com estimates the following:

- People in walkable places weigh 6-10 lbs. less than people in auto-oriented communities.
- For every ten minutes a person spends in a daily car commute, time spent in community activities falls by 10 percent.
- One point of Walk Score is worth $3,000 in home value.

Walkable neighborhood design promotes the economic vitality of an area as most residents can meet most or all their basic needs within walking distance from their home, often cited as between one-quarter mile and one-half mile, or between 5-10 minutes walking at a moderate pace. Each of the "D's" plays a role, but they are most impactful when they work together.

The 5 "D's": Density, Diversity, Design, Destinations, and Distance to transit

Although there is significant variation across different parts of the study area and the individual communities that comprise the area, most parts of the study area were built out before widespread use of the automobile and fulfill some or even most of the requisite needs of the five "D's." Generally, building scales and patterns are oriented to the pedestrian, though some areas (shopping centers, industrial zones, institutional uses) have lost land to large surface parking lots. In addition, certain roads are firmly oriented to the automobile. The general **design** and development patterns of the area correspond to many older, inner-ring suburbs built around transit. Many of the neighborhoods are purely residential, with areas of retail in a downtown core and/or stretch out along commercial arterials. Two communities that are closest to transit – Brookfield and Riverside – have retained highly walkable central business districts.

Diversity refers to how many different uses coexist in a place and how close together they are. Having the right mix of land uses can help 'activate' a neighborhood or area throughout day. A broad mix of businesses combined with a diverse array of housing options means that people can work close to where they live, and access many businesses on foot. Many suburbs, built as "bedroom communities," lack diversity of land use over large areas. The study area exhibits large swaths of purely residential neighborhoods, however some areas provide a mix of single and multi-family buildings. In addition, housing near business districts or commercial corridors, when connected by pedestrian infrastructure, creates opportunities for walking.

On the scale of the region, there is relatively high population **density** and number of **destinations** within or near the study area. Some of these destinations, however, are not easily or conveniently reached on foot. According to the U.S. Census, Brookfield has the greatest density, at 6,192 persons per square mile and an average of 2,539 housing units per square mile. Lyons, Riverside, and North Riverside all have between 4,000 and 4,500 persons per square mile and 1,800 to 1,900 housing units. Key destinations

are clustered in downtown Riverside and Brookfield, at the "Eight Corners" traffic circle and near the Brookfield Metra station. Other important destinations, which should encourage walking – generally and as a means of access – include Brookfield Zoo, Forest Preserve properties and facilities (including trails, nature centers, recreation centers, picnic areas, canoe launches, etc.). The area is well-supported by transit, covered in more detail in the transit section. Three Metra stations with high percentages of riders arriving on foot, are located within the study area. Three Pace bus lines traverse the area. As mentioned above, two FPDCC HOPR bike share stations are located in the study area.

Another very important factor for walkability is the presence of sidewalks. Sidewalks provide a dedicated right-of-way for pedestrians and represent the most basic and essential element in walkable communities. The study area and the communities that comprise or border it have, for the most part, good sidewalk coverage. However, some issues with area sidewalks have been noted. These include concerns related to maintenance and the condition of sidewalks; the encroachment of vegetation and of parked vehicles; the presence of obstacles such as light poles or sign posts in the sidewalk; the absence of curb ramps and other accessibility features; and difficulties encountered where sidewalks cross train tracks. In addition, field research and stakeholder interviews revealed concerns with sidewalks – especially along major arterials – that are located directly adjacent to travel lanes carrying high-speed, high-volume traffic. 1st Avenue was often cited as an example of this situation. Finally, there are locations where sidewalks are completely lacking. 31st Street, between Prairie Avenue (in Brookfield) and Des Plaines Avenue/Woodside Road (in Riverside) is the most conspicuous example of a corridor where pedestrian (and bicyclist) accommodation is both lacking and needed (according to existing community and regional plans, stakeholder input, field investigation, and Strava Global Heatmap data.)

Figure 5.11-5.14: Examples of Pedestrian Issues and Conditions (Ogden Ave., 1st Ave., and 31st St.)

Source: CMAP and Google Maps

The wide sidewalk to accommodate bicyclists and pedestrians on the south side of the bridge carrying 31st Street over Salt Creek, which IDOT included as part of reconstruction, was supported by project stakeholders, including the Village of Brookfield, Brookfield Zoo, and the Village of Riverside. More recently, the Village of Brookfield applied for and was successful in obtaining CCDOTH Invest in Cook funds for the *31st Street Multimodal Impact Study*, to "conduct a feasibility/planning study for the accident prone intersection at Maple Avenue and 31st Street, as well as a bike/pedestrian path along 31st Street." To support their application, the Village of Brookfield noted that, "*In a recent Active Transportation Alliance survey, over 70 comments were focused on the lack of a sidewalk or path on 31st Street to the Zoo*." The application received letters of support from State Representative Michael J. Zalewski, two Cook County Commissions (Morrison and Tobolski), the Chicago Zoological Society, the FPDCC, the Central Council of Mayors, and the President of the Village of Brookfield.

Figure 5.15: Bridge Carrying 31st Street over Salt Creek (looking east)

Source: Google Maps

In summary, the study area offers, overall, good conditions for walking. However, the land use does not encourage walking for many trips and the Walkscores reflect this fact: most of the areas have scores of 40-45, which is considered "Car Dependent." Downtown Brookfield, due largely to the number of businesses and proximity of transit, score 75, "Very Walkable." Downtown Riverside scores slightly lower (67), due most likely to having fewer businesses. Lyons, in the area of Ogden and Joliet scores 56, "Somewhat Walkable." North Riverside scores in the low 40s to low 50s, "Car Dependent" to "Somewhat Walkable."

Transit

The study area has good access to transit. It is served by three stations along Metra's BNSF line (Riverside, Hollywood, and Brookfield). Three Pace bus routes traverse the area – although one of these, "304 – North Riverside-LaGrange," is one of 14 Pace routes that "do not meet minimum performance standards of efficiency, productivity and ridership, and are proposed [pending public hearings] to be discontinued before April 1, 2019."

U.S. Census American Community Survey (ACS) 5-year estimates for 2011-2016 indicate that the use of transit as a means of travel to work varies significantly between the four study area communities. Approximately 22.4% of Riverside residents commuted to work via public transportation; 9.2% of Brookfield residents; 6.2% of Lyons residents; and 3.3% of North Riverside. This variation is likely a function both of distance between neighborhoods and transit, and location of employment.

Metra

Metra's BNSF line serves 26 stations between downtown Chicago and Aurora, and is the highest ridership commuter rail line. Of the three stations within the study area, Riverside and Brookfield are the busiest, with Hollywood serving residential neighborhoods nearby, as well as Brookfield Zoo, which is approximately ½-mile north of the station. Hollywood, however, is an accessible station, while both Riverside and Brookfield are considered "partially accessible." Pace bus route 331 connects to the Brookfield Metra Station.

Table 5.1 highlights ridership, parking capacity and utilization, and mode of access at each of the three Metra stations serving the study area. The lack of bicycle parking at Riverside and Hollywood has been noted in previous municipal plans[2], which recommend installation of bike parking at these stations. Brookfield station, which has among the highest walk-bike mode-of-access shares on the BNSF line, will be adding 12 covered bicycle parking spaces. This bike parking was funded with a 2017 Access to Transit Improvement Program grant. An RFP for Phase II engineering and Phase III Construction was released by the Village of Brookfield in May, 2018.[3]

Table 5.1: Study Area Metra Stations

Station	Boardings, 2016 (For typical weekday)	Alightings, 2016 (For typical weekday)	Parking Utilization, 2016	Bike Parking Capacity, 2018	Bike Parking Utilization, 2018	Model of Access (Walk, Bike), 2016
Riverside	499	574	95% (Effective) 73% (Observed) 164 spaces	8	50%	56% Walked 6% Biked
Hollywood	120	191	100% (Effective) 27% (Observed) 49 spaces	0	NA	87% Walked 0% Biked
Brookfield	572	624	87% (Effective) 56% (Observed) 238 spaces	24	50%	49% Walked 4% Biked

Source: RTAMS and Metra

[2] Riverside 'Central Business District Plan' and Brookfield 'Active Transportation Plan.'
[3] See https://brookfieldil.gov/requests-for-qualification/.

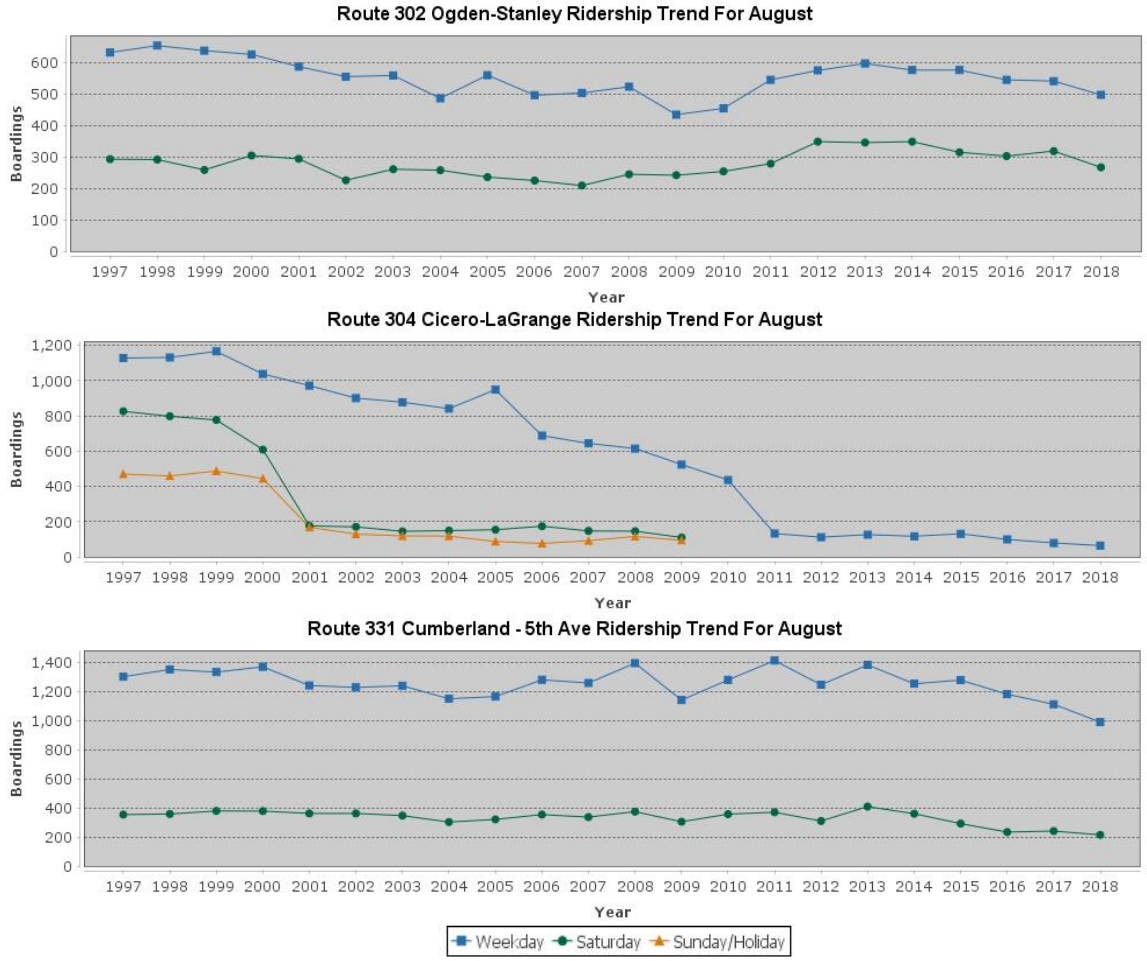
Pace

Three Pace bus routes currently traverse the study area:

- **302 Ogden - Stanley** – This route provides weekday and Saturday service between Cermak/Cicero in Cicero and La Grange/Hillgrove in La Grange. It serves the CTA Pink Line Cicero Station, Morton East High School, MacNeal Hospital and the Amtrak/Metra BNSF Line La Grange Road Station.
- **304 North Riverside - LaGrange** – This route provides weekday service between the North Riverside Park Mall and La Grange/Hillgrove in La Grange. Serves the North Riverside Park Mall, Morton West High School, Riverside-Brookfield High School, Brookfield Zoo and the Metra/Amtrak BNSF Line La Grange Station. *Note: this route does not meet minimum performance standards of efficiency, productivity and ridership, and is proposed to be discontinued before April 1, 2019.*
- **331 Cumberland - 5th Avenue** – This route provides weekday and Saturday service between the CTA Blue Line Cumberland Station in Chicago and the Brookfield Village Hall. Serves the CTA Blue Line Cumberland Station, Triton College, Gottlieb Memorial Hospital, Hines Hospital, Loyola Hospital, Brookfield Zoo and the Metra BNSF Line Brookfield Station.

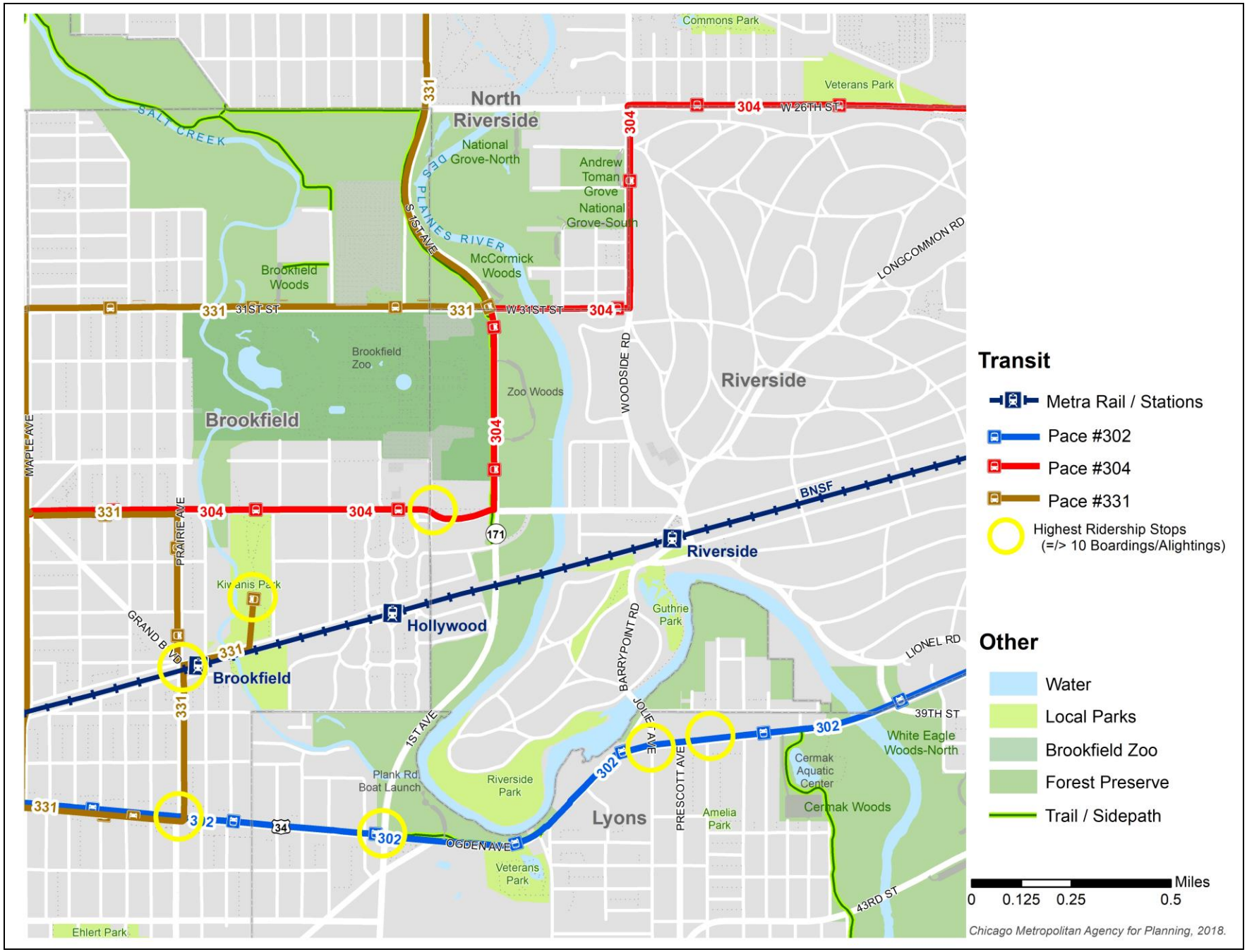
Ridership has dropped over the last few years on all three routes, though most precipitously on the 304.

Figure 5.16: Pace Ridership Trends



Source: RTAMS

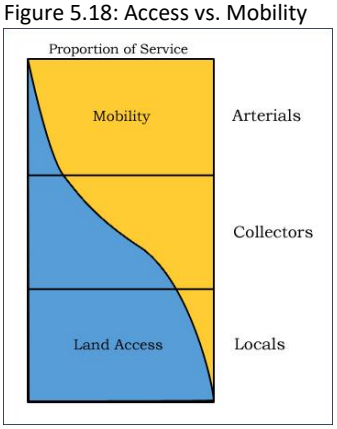
Figure 5.17: Transit



Roadway Characteristics

Roads provide space for three vital functions within a community – mobility, commerce, and civic life. The study area' street network consists largely of local roads that accommodate the area's residential character. However, there are a number of arterials, which are often barriers to bicycling and walking because of high traffic speed and volume, and great widths – especially at intersections where multiple turn lanes have been added. These characteristics make large arterials difficult and potentially dangerous for pedestrians and bicyclists to cross and to travel along. Collector roads are present, representing several key existing and planned community bike routes.

Figure 5.18: Access vs. Mobility



Source: CMAP

These roadway types correspond to "functional classification." The functional classification of a road describes the character of the road in terms of vehicular mobility (speed and travel distance, or 'through traffic' vs. 'local traffic), access to adjacent properties, and the level of service they are intended to provide. Table 5.2 provides a breakdown of roadways in the study area based on IDOT's functional classification designations. Additionally, the average daily traffic (ADT), width, and jurisdiction of each roadway are provided for comparison and to identify the agency responsible for repairs and maintenance.

Table 5.2: Road Characteristics

Functional Classification	Roadway	Municipality	Traffic Count (ADT)	Truck Volume (ADT)	Jurisdiction	Lanes	Posted Speed
Principal Arterials	Illinois Route 171 (1st Avenue)	Riverside, North Riverside, Lyons, Unincorporated	26,500-35,100	3,800-4,200	IDOT	4-5	40
	Ogden Avenue (U.S. 34)	Lyons	16,400-23,800	800	IDOT	4-5	25-30
Minor Arterial	31st Street (west of 1st Ave.)	Brookfield, Riverside	13,700	NA	IDOT, maintained by other	4-5	30%
Major Collectors	26th Street (east of 1st Ave.)	North Riverside	12,700	NA	IDOT, maintained by other	2-5	25
	31st Street (east of 1st Ave.)	Riverside, Brookfield	13,700	NA	IDOT, maintained by other	4-5	35
	Golfview Avenue	Brookfield	3,750	NA	IDOT, maintained by other	4	NA
	Washington Avenue	Brookfield	3,600	NA	Local	2	25
	Prairie Avenue	Brookfield	3,350	NA	Local	2	30
	Forest Avenue/ Burlington Street	Riverside	5,650	NA	Local (bridge: IDOT)	2	25
	Woodside Road	Riverside	12,000	NA	Local	2 (with raised center median)	25
	Joliet Avenue	Lyons	4,300	NA	Local	2	25
	Lawndale Ave.	Lyons	3,450	NA	Local	2	25
Minor Collectors	Longcommon/ Riverside Road	Riverside	2,100	NA	Local	2	25
	Brookfield Avenue (Woodside and Golf)	Brookfield	NA	NA	Local	2	25
	Barrypoint/Millbridge	Riverside	2,100	NA	Local (bridge: IDOT)	2	20
	Quincy Street	Riverside	1,350	NA	Local	2	25
Local Roads	All other streets	Brookfield, Riverside, North Riverside, Lyons, Unincorporated	NA	NA	Local	NA	NA

Source: IDOT, CMAP

Figure 5.19: Roadway Functional Classification

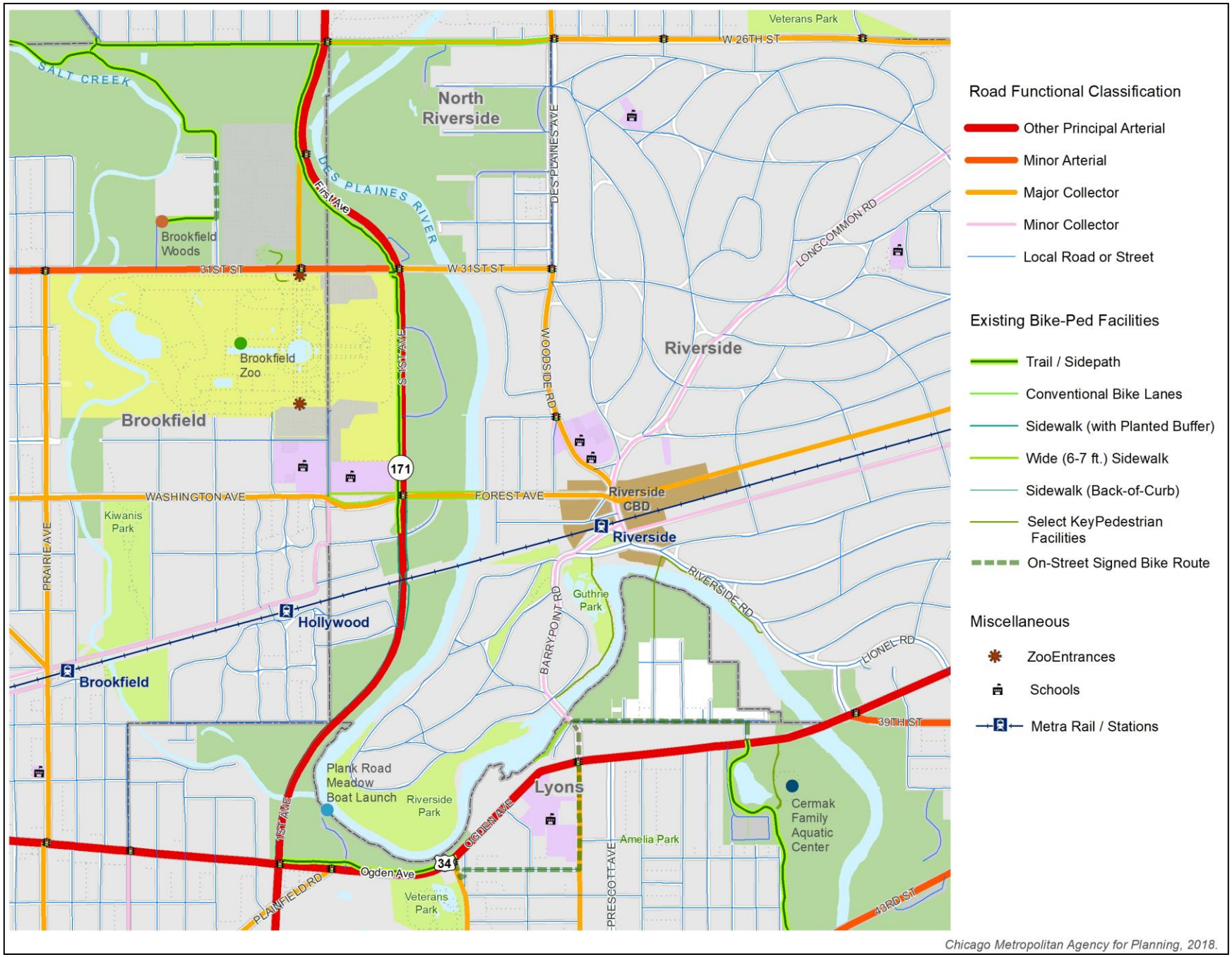


Figure 5.20: Roadway Jurisdiction

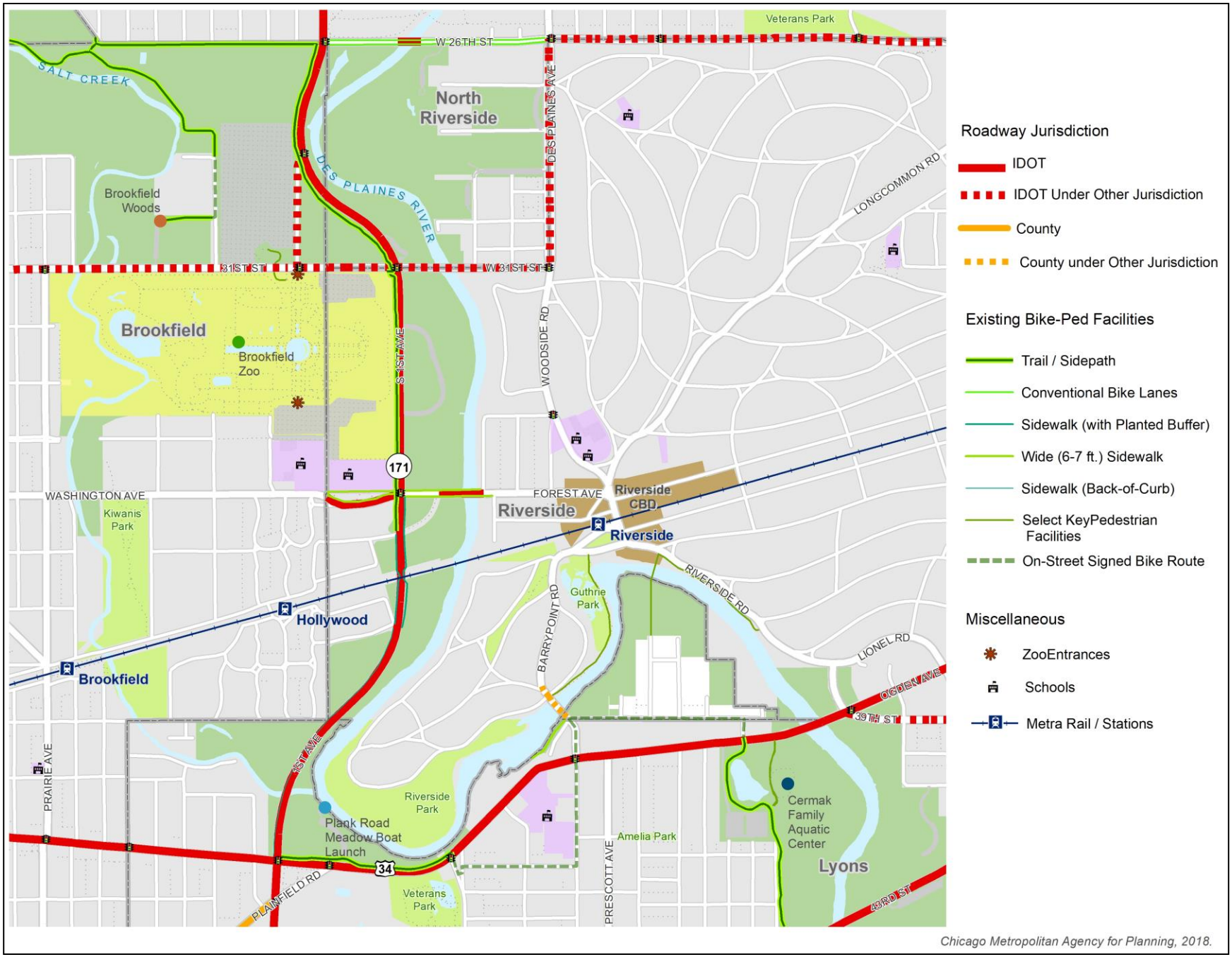


Figure 5.21: Roadway Width vs. Available ROW

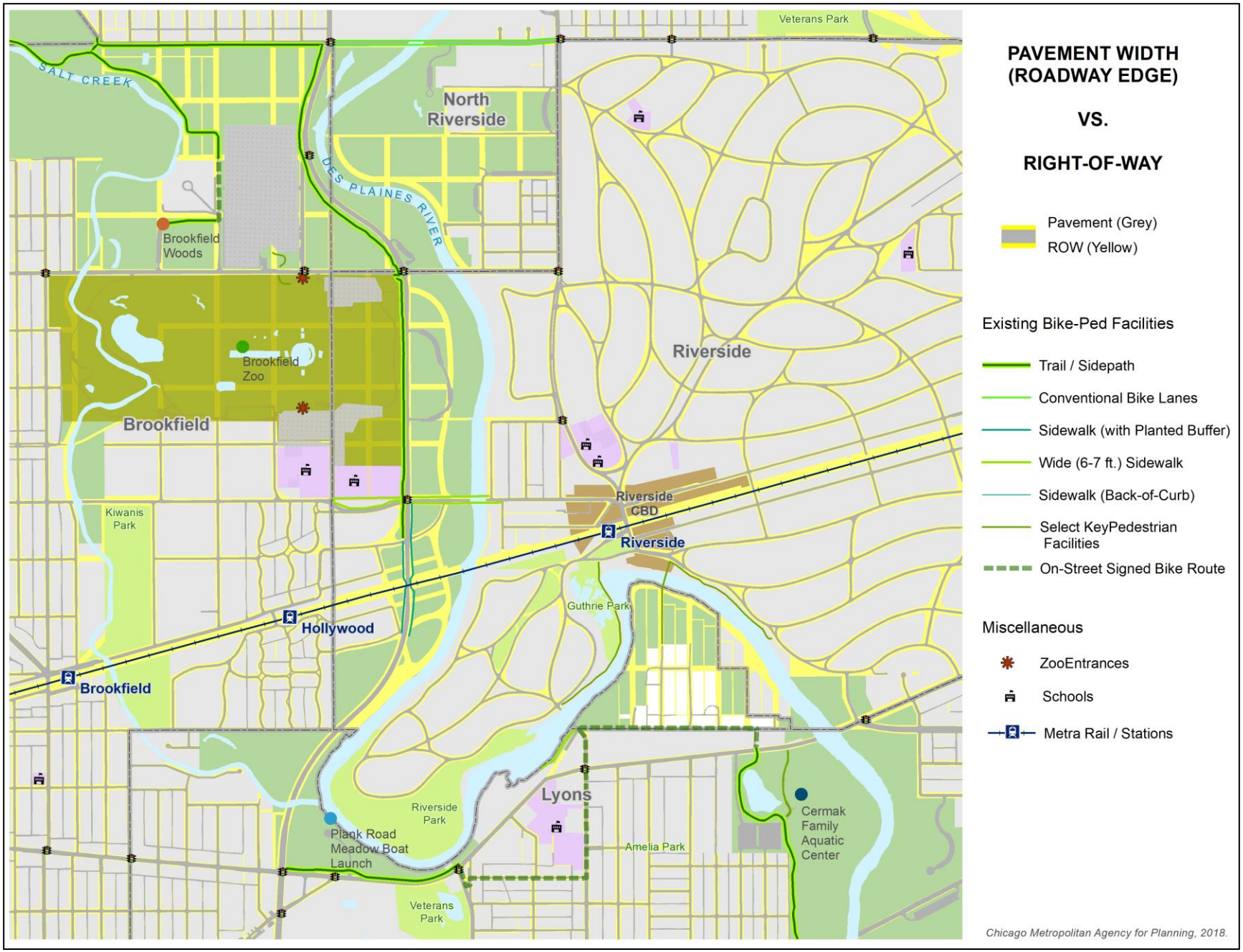


Figure 5.22: Average Daily Traffic

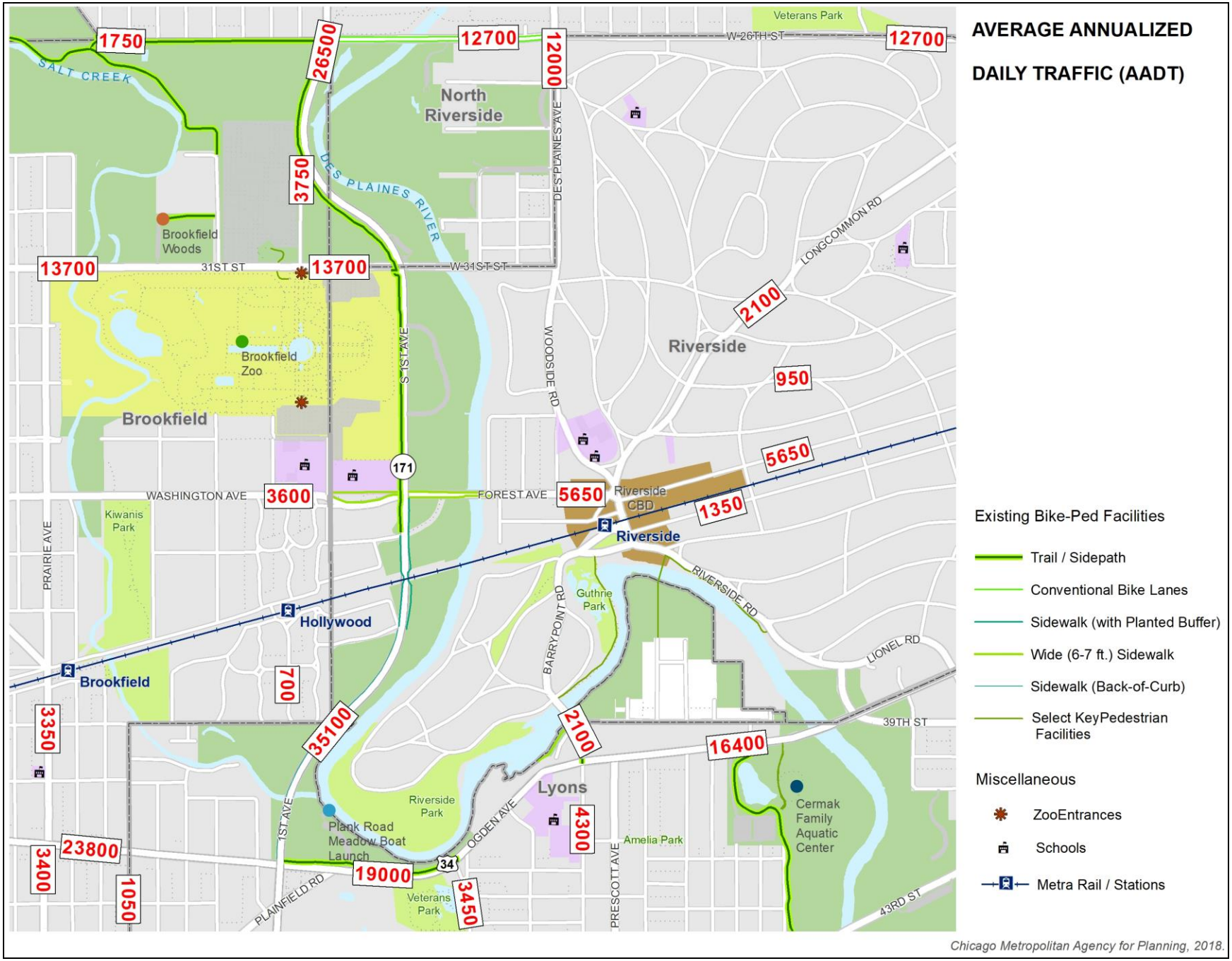
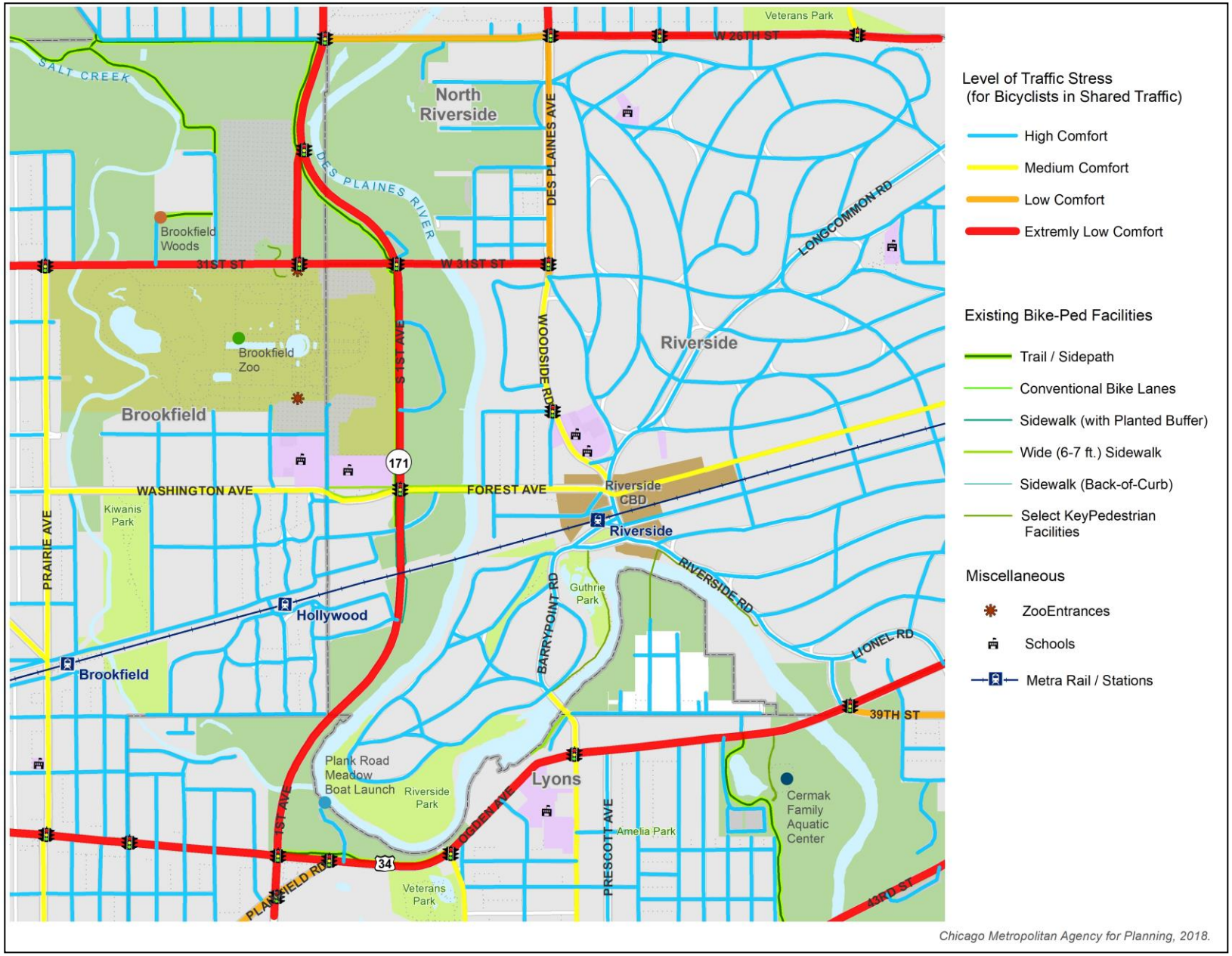


Figure 5.23: Bicycle Level of Service/Comfort (including signalized intersections)



SUMMARY OF ROADWAY BICYCLE LEVEL OF COMFORT

Extremely Low Comfort	Low Comfort	Medium Comfort	High Comfort
1st Ave. Ogden Ave. 26th St. (east of Des Plaines Ave.) 31st St.	Des Plaines Ave. 26th St. (between 1st Ave. and Des Plaines)	Washington Ave. Forest Ave. Woodside Ave. Prairie Ave. Joliet Ave./Millbridge Rd.	*All other roads*

The preceding maps illustrate roadway and traffic characteristics that may affect the feasibility and/or desirability of potential alignments and facility types for the Des Plaines River Trail and for key community connector routes. While an off-street trail is preferred, some on-street segments may be necessary, especially for community connector routes. Moreover, it is important to note that existing roadways and associated rights-of-way represent an important asset and opportunity for improving conditions for cycling and walking and for creating a complete, connected network for travel by these modes.

Generally, the larger, busier, and higher speed the roadway and its traffic, the less comfortable and safe it feels to most cyclists and pedestrians, and the greater the need for separated facilities and for improved crossing locations and opportunities. Figure 5.23 aggregates, summarizes, and visualizes data related to roadway size (number of lanes), speed, traffic volumes, and functional classification and rates each road in the study area for bicycle level of comfort, for an average cyclist, riding on-street in mixed traffic conditions. Within the study area, 1st Avenue, 31st Street, and Ogden Avenue represent "Extremely low comfort" roads, for which separated facilities are needed. First Avenue does have a sidepath north of Parkview Avenue and south of there, continuous sidewalk on the west side. However, the latter is both of minimal width and, south of Waubansee Road, directly adjacent to a high-speed, high-volume travel lane, with high truck volumes. In addition, the bridge carrying 1st Avenue over Salt Creek has minimal accommodation for pedestrians and bicyclists: one 4'-5' sidewalk on the west side, and again, directly adjacent to the travel lane. Finally, 31st Street lacks sidewalks between Prairie Avenue and Des Plaines Avenue, although the bridge over Salt Creek has a barrier-protected 10'-11' shared-use path on the south side, and an unprotected 6'-7' sidewalk on the north. Low and medium comfort roads – such as Washington, Forest, and Des Plaines Avenue – can be improved by the installation of on- or, when possible and/or needed, off-street bikeway facilities. The map also shows traffic signal locations, where relatively safe crossings of larger roads are possible. Within the study area, the roadway network, though well-connected and relatively "fine-grained," is disrupted and fragmented by large areas of open space (including the Zoo) along the waterways. While open space can be a destination and offer opportunities for greenway trails, they can also be barriers to travel by bicycle and foot, requiring longer, circuitous routes, and creating pinch points where motorized and non-motorized users must converge. Similarly, the BNSF rail line and stations represent both destinations and a barrier with limited crossing opportunities.

Some key roadways include: 26th Street, 31st Street, Washington Avenue, and Forest Avenue/Riverside Road. Understanding the geometry and characteristics of these roadway's and their traffic is especially important for identifying safe community connector routes.

26th Street

West of 1st Avenue, 26th Street is a 2-way local road with low ADT (1,750). As mentioned above, a sidepath has been constructed along the south side, on Forest Preserve land, which connects to the Salt Creek Greenway Trail, near 9th Avenue. Between 1st Avenue and Des Plaines Avenue, which includes a bridge over the Des Plaines River, 26th Street consists of one through-travel lane in each direction, one-way conventional bike lanes in each direction, and on-street parking (south side, between the Des Plaines River and Des Plaines Avenue). A striped center median extends from the bridge west to the

beginning of a left-turn lane at 1st Avenue. East of the Des Plaines River, the curb-to-curb width is approximately 42 ft. and sidewalks exist on both sides. Posted speed is 25 mph.

East of Des Plaines Avenue, 26th Street becomes a four lane, undivided roadway, with no on-street parking. Posted speed goes up to 35 mph. The curb-to-curb width remains approximately 42 ft. From 1st Avenue east, 26th Street is classified as a major collector. ADT, between 1st Avenue and Harlem Avenue is 12,700. Sidewalks exists on the north side only (Village of North Riverside). On the south side, fencing demarcates the backyards of residences along Northgate Road in the Village of Riverside. Further east, where 26th Street crosses freight rail lines, a sidewalk on the south side connects Parkway Road in Riverside to Harlem Avenue. West of Des Plaines Avenue, 26th Street is a local road; east of Des Plaines, it is under state jurisdiction, but maintained by others.

In the area of the Des Plaines River, 26th Street is bordered by FPDCC property on the south, including National Grove Woods picnic area, and the Riverside Golf Club on the north. Residential uses begin east of the river. Between Des Plaines Avenue and the rail lines/Harlem Avenue, on the north side of the 26th Street, commercial and residential uses mix. Veterans Park and the North Riverside Park Mall lie at the eastern end.

Figure 5.24: 26th Street, between 1st Avenue and Des Plaines Avenue

Source: Google Maps

31st Street

31st Street is under state jurisdiction, but maintained by others. It is functionally classified as a minor arterial. It has four undivided lanes, two in each direction, with turn lanes added at 1st Avenue and Golfview Avenue. The travel lanes are approximately 10' wide, which with narrow shoulders creates an approximate 42' pavement width, edge-to-edge. Segments of the road within study area limits are urban curb-and-gutter, while other segments have a rural cross-section, either with no curbs or with low, rolled curbs. ADT is 13,600, west of 1st Avenue and 10,200 east of 1st Avenue. Posted speed is 30 mph. Except at the bus stops and at the Zoo entrance, no sidewalks exist along 31st Street. However, as mentioned above, the structure carrying 31st Street over Salt Creek has a protected 10'-11' sidepath on the south side, and a 6-7 foot unprotected sidepath on the north.

Between Salt Creek and 1st Avenue, the Zoo occupies all the frontage land to the south. Several service gates exist here, though not all appear to be in use. On the north side of 31st Street, Zoo parking (accessed via Golfview Avenue) and an entrance plaza with pay and information kiosks, seating, restrooms, etc. occupies a large parcel (approximately 30 acres). The plaza functions as the primary

entrance to the Zoo, which the majority of visitors access via private automobile, by leading to an underpass beneath 31st Street onto Zoo grounds proper. The T-intersection of 31st Street and Golfview Avenue is signalized, with bus stops (Pace route 331) on the northeast corner and on the south side, where a small plaza/path connects to an at-road-grade entrance to the Zoo. A marked crossing exists on the east leg of this intersection. The north and west legs are not marked with crosswalks, nor is there a pedestrian/bicycle connection/path on the northwest corner. Chain-link fencing, set back approximately 8-12 feet, has been erected here, running from the underpass to the entrance into the Zoo parking lot. Brookfield Woods parking lot, picnic shelter, HOPR bike station, and Salt Creek Greenway Trail access point occupy land adjacent to (west of) the Zoo parking lots. McCormick Avenue, which provides access to the Cantata Senior Living Community, runs between Brookfield Woods and the Zoo parking. An unlocked gate off of McCormick Avenue, near 31st Street, leads into the Zoo parking lot. The gate is marked on both sides with signage stating "Bicycle Entrance/Exit" and directing cyclists to/from the Salt Creek Bicycle Trail. In addition, in early 2015, the southern-most bay in the Zoo parking lot was moved approximately 8-9 feet north to provide a bicycle path to/from the gate to bicycle racks nearer the entrance plaza. Additional signage requests that bicycles "Please secure your bicycles. Bicycles are not allowed inside the Zoo." The racks provided, however, are of a very poor design ("wheelbender") and are not secure or conveniently placed. 31st Street has been identified in local (Village of Brookfield) and regional (WCMC) plans as a high-priority corridor for bikeway improvements.

Figure 5.25: Bicycle Accommodations at Brookfield Zoo's North Parking Lot

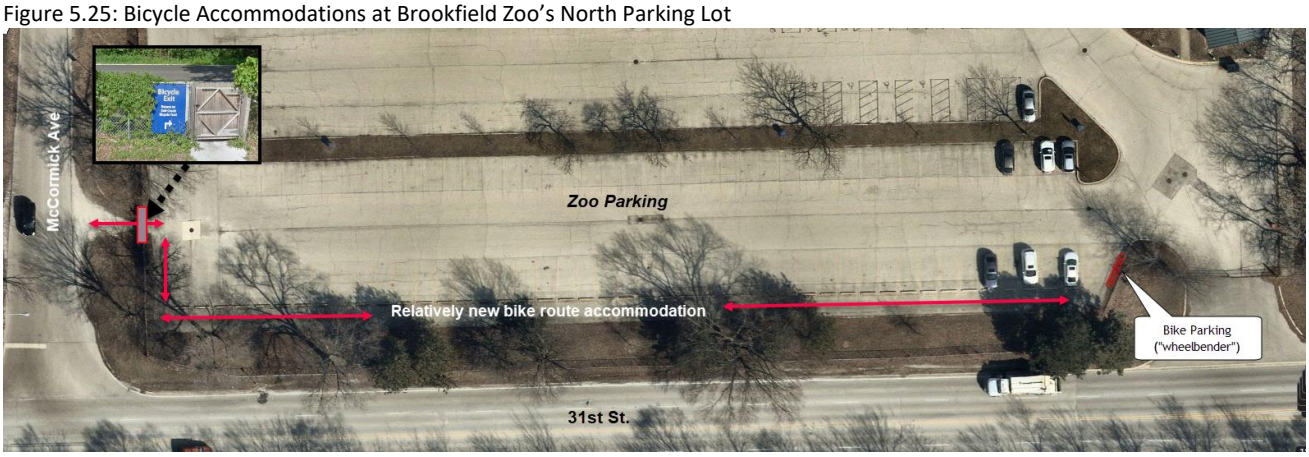


Figure 5.26: 31st Street in area of Brookfield Wood / Zoo

Source (both images): Nearmap (altered by CMAP)

Washington and Forest Avenues

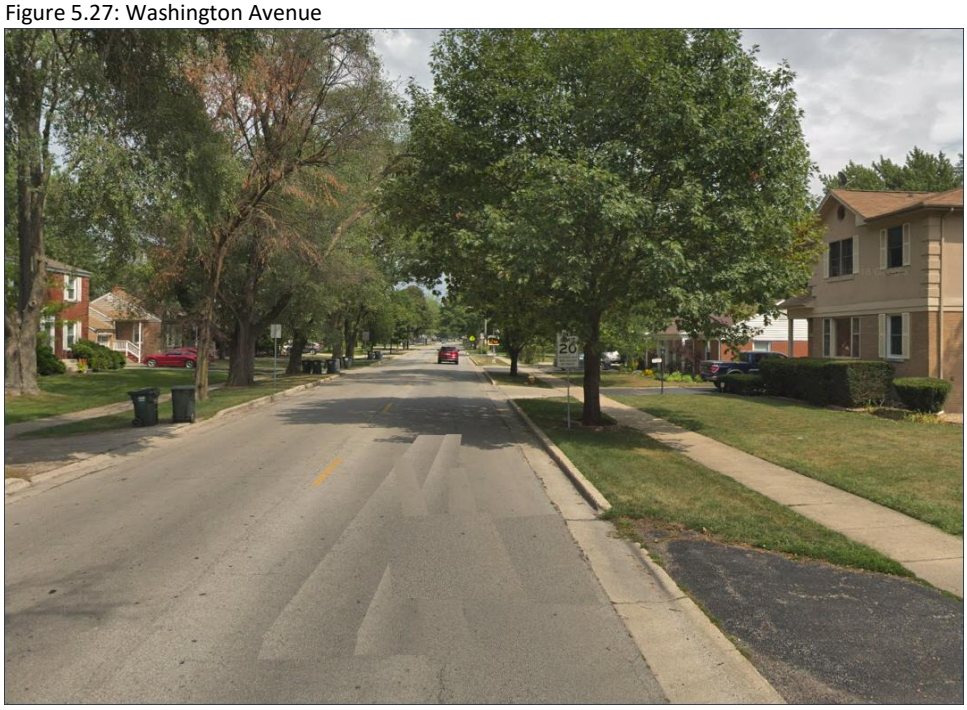
Washington Avenue, in the Village of Brookfield, is under local jurisdiction. It is functionally classified as a major collector, with a posted speed limit of 25 mph. It is approximately 30 ft. wide, curb-to-curb, with one travel lane in each direction and a striped centerline. ADT is 3,600. In the area of the project, there is no on-street parking. Sidewalks exist along both sides of the road, which between the "Eight Corners" traffic circle and Riverside-Brookfield High School (at 1st Avenue) is largely residential. The road has been identified in Village plans as a high-priority candidate for on-street bike lanes and other bike route improvements. Washington Avenue's connection to the recently installed bicycle boulevard on Arden Avenue increases the utility proposed bike lanes.

Washington Avenue turns into Ridgewood Road at Golf Road (near Riverside-Brookfield High School), which, in turn, east of 1st Avenue, becomes Forest Avenue. Forest Avenue connects the Villages of Riverside and Brookfield, and provides rare local access across the Des Plaines River, to the High School, the Zoo (south entrance), and to the Salt Creek Greenway Trail, via the 1st Avenue sidepath.

Forest Avenue is a key access route for students living in Riverside to walk and bicycle to school. It gained additional importance as a bicycle route when the trail along 1st Avenue was completed. Forest Avenue provides an important local connection between Riverside's downtown business district and Metra station to the Salt Creek Greenway Trail.

Forest Avenue – except for the bridge over the Des Plaines River, which is under IDOT control – is under local jurisdiction. It is functionally classified as a major collector. The posted speed limit is 25 mph and the ADT is 5,650. Except for right and left turn lanes at 1st Avenue, the road is one lane in each direction. East of the Des Plaines River, on-street parking is allowed on both sides of the street, with fairly high utilization at the eastern end where it meets East Avenue/Longcommon Road and where multifamily housing and commercial uses are present. The curb-to-curb width is approximately 36 ft. (two 7.75' parking lanes and two 10' travel lanes). Sidewalks exist on both sides of the road. The sidewalks are widened to approximately 6-7' on and west of bridge (from Groveland Avenue to 1st Avenue).

Figure 5.27: Washington Avenue



Source: Nearmap

Figure 5.28: Forest Avenue

Source: Nearmap

Intersections and Streetscaping

While most of the study area's intersections are controlled by stop signs, there are approximately 19 signalized intersections in and near the study area, mostly along arterials and major collectors (1st Avenue, Ogden Avenue, 26th Street, 31st Street, Woodside/Des Plaines Avenue). Pedestrian crossings at signalized intersections vary throughout the area. Examples of existing pedestrian crossing features include enhanced crosswalk designs[4], longitudinally-striped crosswalks, pedestrian countdown signals, accessible curb cuts, advance stop bars, warning signage, and standard crossings marked by two parallel lines. Intersections involving one or more of the multilane arterial roads present particular challenges due to the longer crossing distances, larger traffic volumes of traffic (including large trucks), higher operating speeds, and more complicated vehicular movements (double turn lanes, skewed intersections, etc.).

In the study area, 1st Avenue and Ogden Avenue are major arterials and carry the largest average daily traffic volumes – 35,100 and 19,000 respectively. First Avenue and Ogden Avenue, while not designated truck routes, also carry significant truck traffic and, typically, may have relatively large curb radii at intersection corners to accommodate such vehicles. These intersections can be difficult to traverse for pedestrians and bicyclists. However, there are treatments to improve conditions for bicyclists and pedestrians at these intersections. Such treatments are especially important at locations where trails cross arterial roads. Examples of improved trail crossings can be seen along 1st Avenue, where the recently completed sidepath runs from 26th Street to Parkview Avenue.

[4] For example, crosswalks that have colored and stamped pavement, in-road "stop for pedestrian" signs, or activated pedestrian beacons.

Areas within the study area include elements of pedestrian-friendly streetscaping, including brick pavers for crosswalks, planters, benches, on-street parking, wider sidewalks, and pedestrian-scaled lighting. As mentioned above, a high percentage of streets in study area communities have sidewalks, and street trees are often present as well. Thirty-first Street lacks sidewalks between Prairie Avenue and Des Plaines/ Woodside Road, and the east side of 1st Avenue is missing sidewalks in many sections. In addition, sections of 1st Avenue and Ogden Avenue have the sidewalks directly adjacent to the travel lane (i.e. 'back-of-curb'), without a buffer, which creates an uncomfortable (and potentially unsafe) pedestrian environment.

Right of Way

Many roadways have rights-of-way (ROW) that are wider than the actual roadway and roadside elements currently occupy. Unused ROWs may been established with a view toward future expansion. When available, this additional ROW can provide the space needed for improved shared-use facilities along a roadway – sidepaths, trails, sidewalks, etc. Figure 5.29 (and 5.21) illustrate the difference between current pavement width and available ROW on 1st Avenue, just north of Salt Creek. It should be noted, however, that further detailed analysis of ROW and current roadway geometry would be needed to draw definitive conclusions.

Figure 5.29: 1st Avenue Pavement and ROW

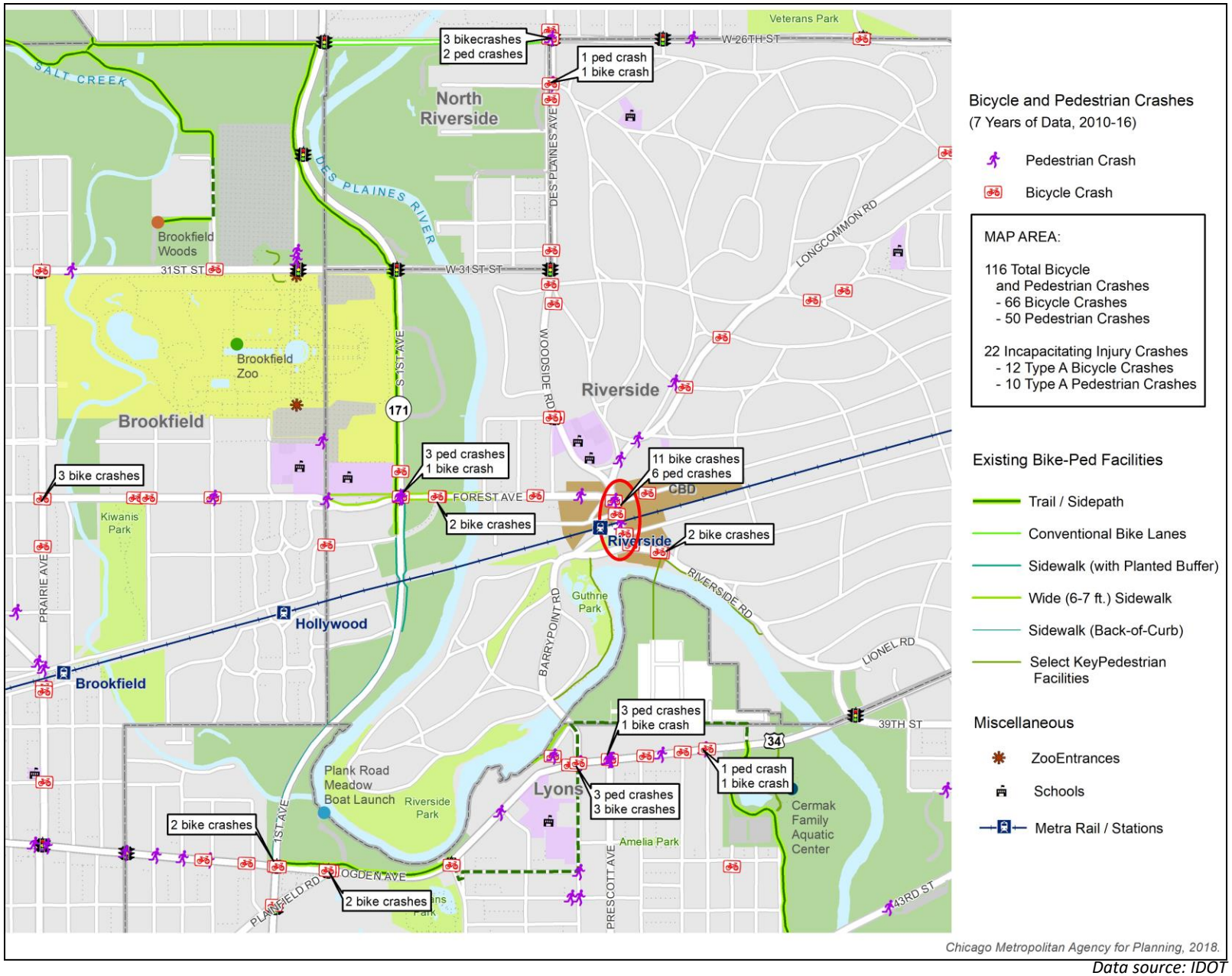
Source: CMAP

Safety

Though we've touched on safety issues in the sections above, a map showing pedestrian and bicycle crashes over several years can help identify locations where improvements may be needed. Figure 5.30 shows locations of both pedestrian and bicyclist crashes, and highlights the intersections where multiple crashes took place during the years 2010 to 2016. However, without data for volumes of pedestrians and bicyclists traveling along roadways, we cannot calculate the relative risk of crash locations. Higher numbers of crashes in downtown areas and around Metra stations and high-ridership Pace bus stops are likely the result of more people walking there, rather than greater risk.

Generally, large and busy arterial roads present the greatest potential dangers to pedestrians and bicyclists, due to vehicle speeds and, at intersections, length of exposure. For seven years of data (2010-2016), 16 of the 22 incapacitating injury crashes (Type A) in and near the study area occurred along arterial roads. Four of the 22 Type A crashes occurred along major collectors, and only two were on local roads. Twelve of the 16 Type A crashes occurred along Ogden Avenue (though a few of these were just outside the study area proper) and 2 along 1st Avenue. No fatal crashes occurred within or near the study area during the years 2010-2016.

Figure 5.30: Bicycle and Pedestrian Crashes



Data source: IDOT

Land Use, Key Destinations, and Environment

The land use presents a mix of residential (largely single family, but also significant amounts of multi-family), open space (primarily FPDCC lands, but also municipal parks), commercial development (in downtown areas and along Ogden Avenue), and institutional uses (primarily schools and government offices). The large amount of open space within the study area is situated mostly around the two waterways, Salt Creek and the Des Plaines River, which converge near the intersection of 1st Avenue and Ogden Avenue. Residential properties in unincorporated land north of 39th Street (in Lyons), which are at high risk for flooding, are currently being acquired by the Army Corps of Engineers and MWRD, with the intention of turning this land over to the FPDCC.

Key regional destinations, shown in purple circles on Figure 5.31, include:

- Existing shared-use trails / trail access points, including:
  - Salt Creek Greenway Trail
  - 1st Avenue sidepath
  - Hoffman Tower / Riverwalk pathway
  - Ogden Avenue sidepath
  - Cermak-Ottawa Woods Trail
- Brookfield Zoo / Zoo entrance
- Metra stations
- Downtown business districts
- Riverside-Brookfield High School
- Cook County Forest Preserve facilities, including:
  - Picnic groves
  - Hiking trails
  - Plank Road Meadow Canoe Launch
  - Cermak Family Aquatic Center

Land around Salt Creek, the Des Plaines River, and their convergence point – mostly FPDCC property – provides important opportunities for flood control and water management, preservation of wildlife and plant habitat, aesthetics, and recreational uses.

While the scope of this study does not include engineering-level analysis of potential constraints related to flooding, wetlands, sensitive and endangered species, topography, property acquisition, and other environmental and legal matters, planning level analysis of flood hazards and flood susceptibility are shown on Figures 5.32 and 5.33. Further investigation and more detailed analysis of specific areas would be necessary to fully understand all constraints, issues, and opportunities, as well as potential policy, regulatory, and infrastructural solutions.[5]

[5] More information can be found in MWRD "Detailed Watershed Plan for the Lower Des Plaines River Watershed" (2011) and a 2018 supplement to it, "Lower Des Plaines River Watershed-Based Plan." See also Chicago Wilderness' "Des Plaines River Communities: Green Infrastructure Mapping Project" and the FPDCC's "Conservation" website.

Figure 5.31: Land Use and Key Regional Destinations

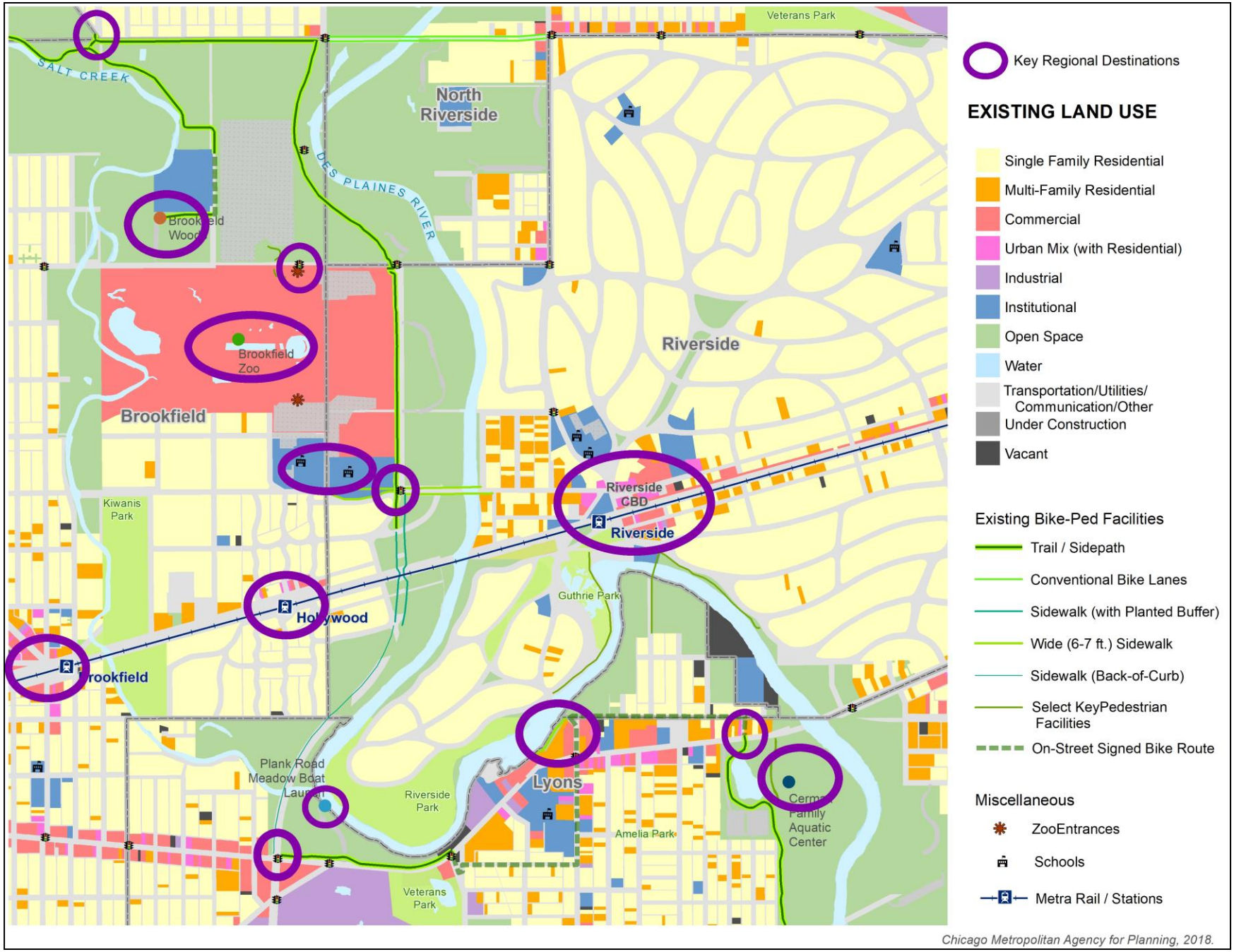
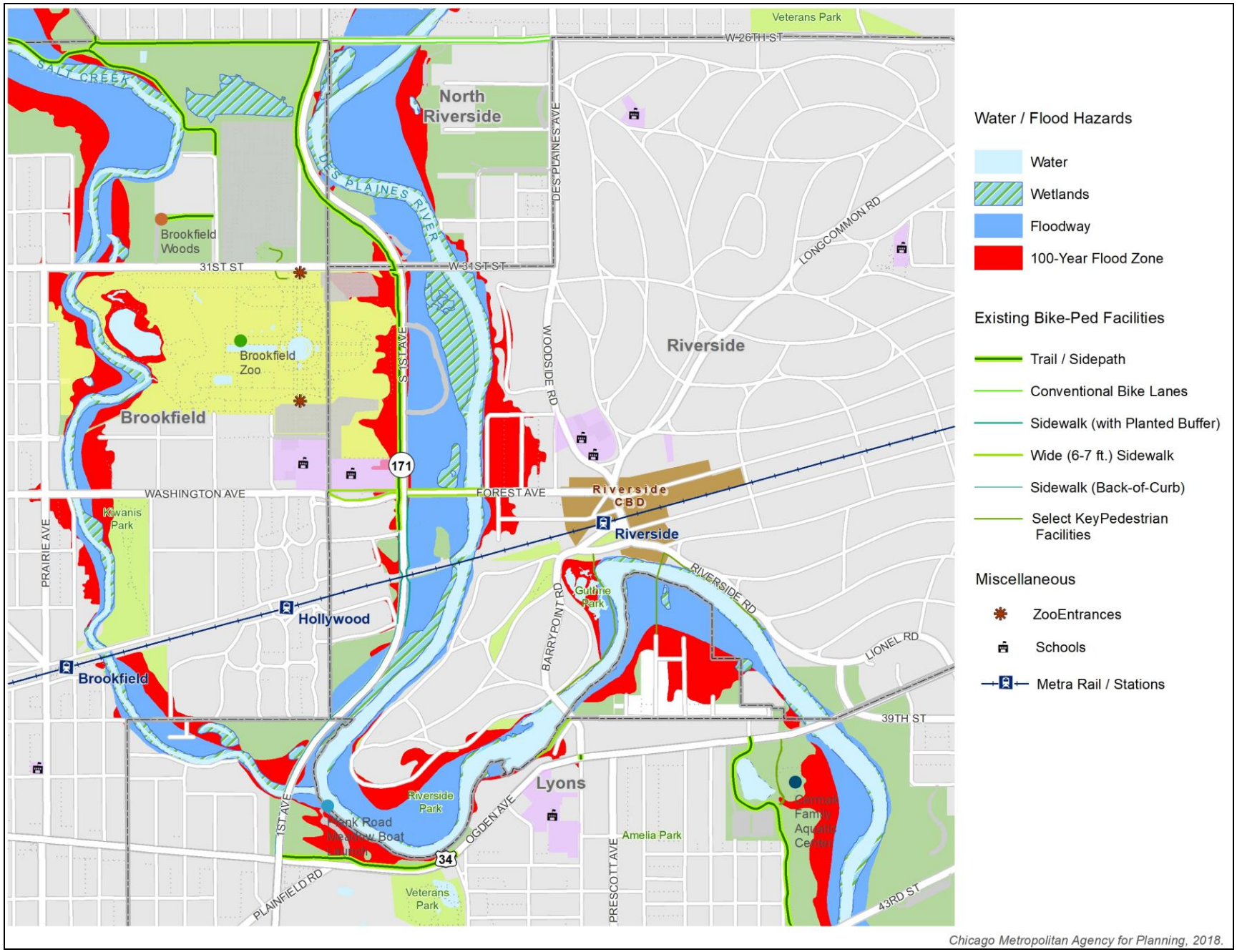
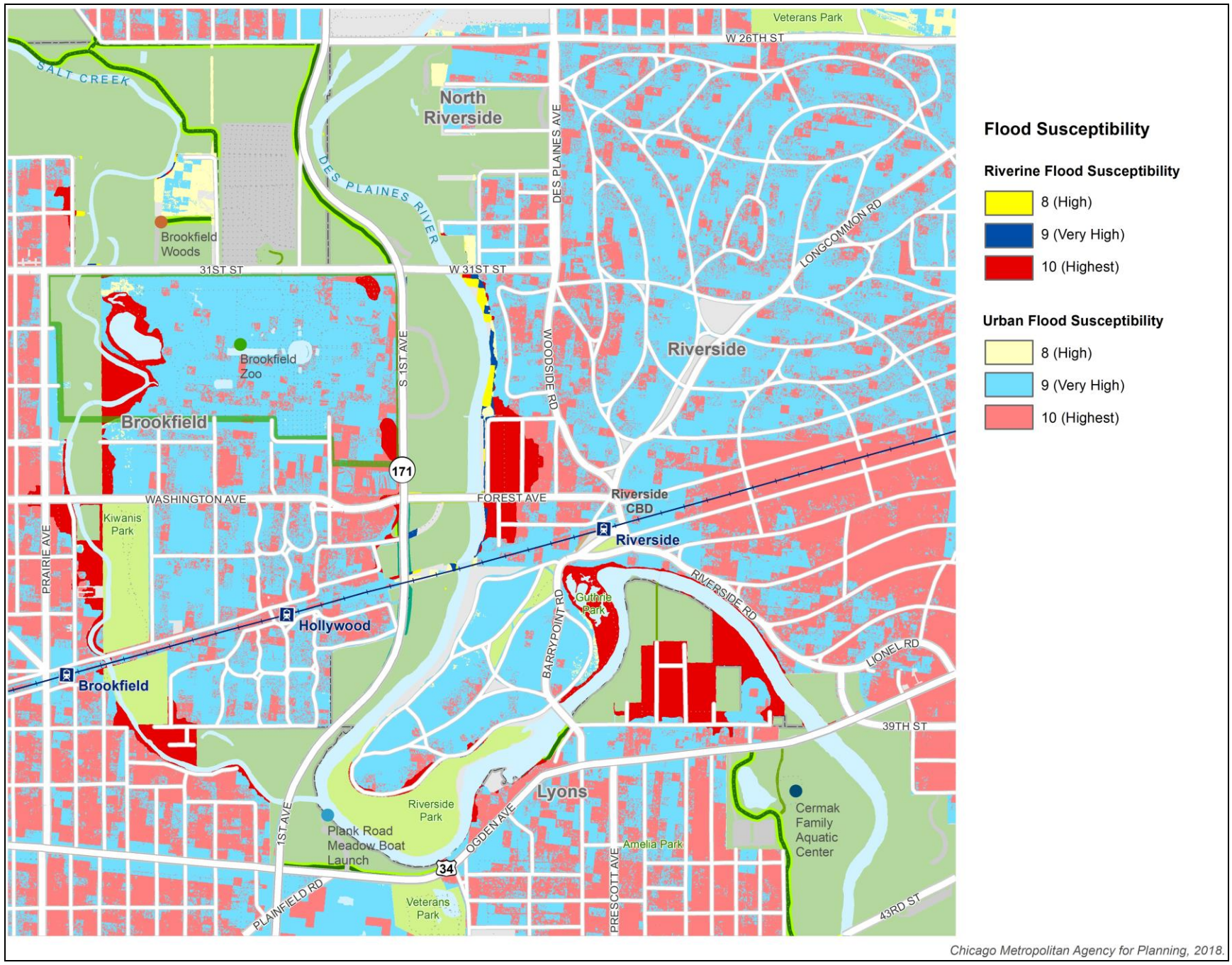


Figure 5.32: Waterways and Flood Hazards



Data Source: FEMA, National Flood Hazard Layer

Figure 5.33: Flood Susceptibility Index

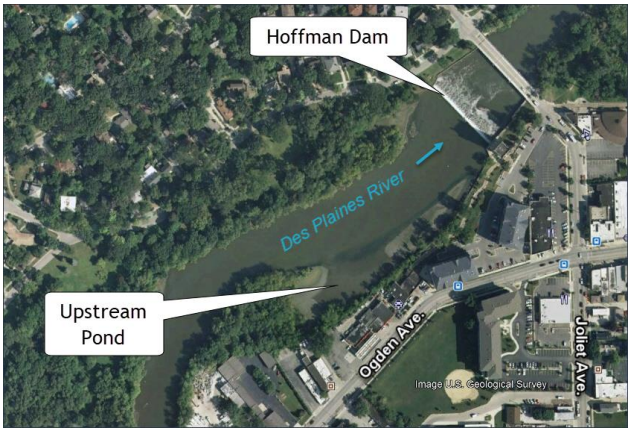


The study area contains large tracts of land (along the rivers) that are within the 100-year flood plain, as well as wetlands. Historical records indicate that flooding has been a problem in the area for many decades. When viewed at the regional scale, the entire study area may be characterized as having a high vulnerability to flooding. CMAP's recently developed flood susceptibility index identifies priority areas across the Chicago region for flood mitigation activities.[6] The urban flood susceptibility index compares known flood locations to characteristics of the build environment such as impervious cover, topography, combined sewer systems, and the age of buildings to determine whether an area is more or less susceptible to experience urban flooding. The study area overall receives a high to very high urban flood susceptibly score due to combined sewer systems, older development (buildings and infrastructure), and relatively high density resulting in high impervious cover. The riverine nature of the study area, however, is likely the primary cause or factor in area flooding. Riverine flooding is indexed separately; significant tracts within the study area do show high vulnerability to this type of flooding.

Hydrology and flooding in the project area have been significantly affected by the removal Hoffman Dam in 2012. Hoffman Dam, constructed in 1950 – though a dam had been here since 1827 – was located next to the Hoffman Tower, just southwest of Millbridge Road, on the Des Plaines River. As a result of bridge removal, ponds just upstream of (and caused by) the dam – especially on the south bank – dried up and new land was revealed. Further engineering analysis is needed to determine flood and hydrological conditions post-dam-removal. However, according to Village staff, adjacent business owners, and nearby residents – as well as field investigation – this land, post-dam-removal, rarely floods, though it is within the flood plain and, per FEMA data (which may be out of date), very near the floodway. The new land is located behind several businesses that front on Ogden Avenue, between Joliet Road and Lawndale Avenue. Parcel data shows that these properties extend into the new land and, in a several cases, into the river itself. The Village has expressed an interest in further investigating acquiring properties or an easement behind them, to connect the existing Ogden Avenue trail and the Riverwalk Park pathway with a continuous, off-street trail in a natural setting along the river.

Figure 5.34: Des Plaines River, before and after Removal of Hoffman Dam

Before:



After:

Source: Nearmap and Google Earth

[6] Chicago Metropolitan Agency for Planning, Regional Flood Susceptibility Index. 2018

Section 6. Looking Ahead

The communities and landscape of the study area have many qualities and characteristics that make it an important location for trail connections and for active transportation and recreation generally. Existing regional trails and locally-planned connections; popular destinations; scenic open spaces along beautiful rivers; important habitat, ecosystems, and plant communities; excellent transit access; historic architecture and urban design; walkable neighborhoods and vibrant business districts; and engaged citizens, community organizations, and elected officials who passionately support trails, bicycling, walking, and active lifestyles – all these features and assets provide fertile ground for this study and for completing the Des Plaines River Trail, and connecting the existing the Salt Creek Greenway and Cermak-Ottawa Wood Trails.

This existing conditions report identifies a number of issues, advantages, and opportunities that will affect the development and alignment of the Des Plaines River Trail and community connector routes within the study area. The Des Plaines River Trail, South Extension Planning Study will utilize this data and information to formulate planning-level recommendations for potential trail alignments and key community connections. Based on the information and data compiled and analyzed in this report, the following key points will guide and inform the final report:

- Recent, significant investments in multiuse trail segments along 26th Street, 1st Avenue, Ogden Avenue, and within Riverwalk Park represent major opportunities for creating additional off-street connections between the main stretches of existing regional trails (Salt Creek Greenway and Cermak-Ottawa Woods Trails).

- As part of an earlier effort to address gaps in the Salt Creek Greenway Trail, a conceptual study for a route along Salt Creek in the Village of Brookfield and northwest Lyons was undertaken. The Salt Creek corridor in this area remains an opportunity for a potential trail alignment.

- The Village of Riverside has sought to increase and promote bicycling through the identification and designation of three Village bike routes. An on-street trail route though the Village of Riverside, either from the recently constructed shared-use path on 1st Avenue or from 26th Street and Des Plaines Avenue, represents another potential alignment.
    - The Presidents of Riverside and Brookfield, in a letter dated January 11, 2018, to Cook County Commissioner Jeffrey Tobolski, proposed and sought support for a community connector bike route running from the shared-use path at 1st Avenue and Ridgewood Road, east on Forest Avenue, south across the railroad tracks on Longcommon/ Riverside Road, southwest on Barrypoint and Fairbank Road to the Barrypoint/ Millbridge Road in Lyons.
    - An alternate route for the southern-most segment of this alignment would lead to the Caldwell suspension pedestrian bridge. However, the bridge was judged by the Village and Township engineers to be too narrow to function as an official bikeway or regional trail.

- The Village of Brookfield, in a number of plans, has identified 31st Street and Washington Avenue as key east-west community bike routes, which they plan to improve with additional infrastructure. Both of these routes are envisioned as connecting to the recently constructed shared-use sidepath along 1st Avenue, which is just over the Brookfield border in Riverside.

- The Village of Brookfield was recently awarded funding from Cook County's "Invest in Cook" program to for the "31st Street Multimodal Impact/Phase 1 Study." The study will analyze the feasibility and preferred alignment for a shared-use path along 31st Street, between Prairie Avenue and 1st Avenue. The application received letters of support from State Representative Zalewski, two Cook County Commissioners (Morrison and Tobolski), the Chicago Zoological Society (Brookfield Zoo), the FPDCC, the Central Council of Mayors, and the President of the Village of Brookfield. The Village requested $175,000 but received $85,000.
    - Improvements along 31st Street are envisioned to provide bicycle and pedestrian access to the north entrance of Brookfield Zoo. The planned shared-use facility would leverage the existing accommodation provided on the south side of the bridge over Salt Creek.

- Brookfield recently installed "Bicycle Boulevard" markings and signage on Arden Avenue, which connects the commercial area around the Brookfield Metra station to Washington Avenue, where the Village is planning on installing bicycle lanes.

- Community and stakeholder outreach to-date indicates that an off-street trail is preferred. However, on-street routes, if improved with bikeway markings and signage, traffic calming, and other treatments, are considered appropriate and acceptable for community connector routes.

- Flood risks and wetlands, as well as sensitive habitat, need to be considered when developing trail alignments in the study area's open spaces.

- The study area is divided and fragmented by the two waterways, several large, busy roads, and the rail line, as well as large preserved open space and institutional properties like the Zoo and High School, which break the street grid and prevent access.

- New land along the south bank of the Des Plaines River has emerged as a result of the removal of Hoffman Dam. This new land represents a potential opportunity for a scenic trail along the river, behind existing businesses, connecting existing segments.

- Acquisition of flood-prone properties in unincorporated land north of 39th Street, combined with existing FPDCC properties in the area, presents an opportunity for a greenway trail in this area. This routing would avoid existing on-street segments and reduce the number of difficult road crossings.

- Safety improvements are needed at the uncontrolled crossing at Shakespeare Avenue and Ogden Avenue, where the Cermak-Ottawa Woods Trail begins. Similar need for crossing improvements exists at Joliet Road and 47th Street, south of the study area.

These issues and topic areas will be further explored and analyzed in the next stage of the project in order to identify and evaluate potential routes for the Des Plaines River Trail and key community connector routes within the study area